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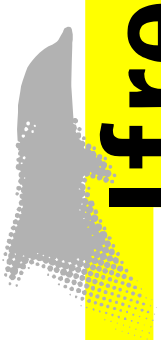

Movies+ User Manual version 4.1

MOVIES+ User Manual

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Résumé :

Ce document constitue le manuel d'utilisation du logiciel Movies+.

Movies+ est un logiciel de traitement des données de sondeurs de pêche à vocation scientifique. Il permet d'évaluer les quantités d'énergies rétrodiffusées (et donc in fine de biomasse) par tranches d'eau et par bancs de poissons. Ces bancs font l'objet d'une caractérisation poussée, morphologique et géographique afin de permettre l'identification autant que faire se peut, de l'espèce concernée. Il permet également l'analyse des index de réflexion des cibles individuelles de poissons ainsi que leur trajectographie.

Abstract :

This document describes how to use the Movies+ Software.

This software allows the user to process data issued from fishing echo-sounders. The back scattered energy can be evaluated in different depth layers, defined by the user or by shoals. These shoals are characterized in order to allow the user to identify, as much as possible, the concerned species. The software allows TS data analysis and trajectory representation of single echoes.

Mots-clés :

Logiciel Movies+, Manuel utilisateur, écho-sondeur de pêche, écho-intégration.

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V 3.3	15/09/01	All	Reorganization
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1. General description of Movies+ software

1.1. Project background

Movies+ software is based on MoviesB software, which was part of the Ines-Movies system developed by the Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer) in the 1980's, and which has been regularly improved since.

Movies+ uses modern technology to extend the possibilities of previous software and provide users with a user-friendly and ergonomic interface. Developed through co-operation between the Fish Technologies (TMSI/TP) office and the Scientific Equipments and Onboard Software (DNIS/ESI) office, it relies on Ifremer's long experience in hydroacoustic technology applied to the fishing industry and its know-how in developing software for scientific research vessels.
The participation of scientists from Ifremer and IRD in the Follow-up Group, and their valuable advice throughout the project were very helpful in developing a highly effective product that is easy to use both onboard vessel and in the laboratory.

Movies+ project was launched in early 1997, a first version (Version 1) was made available to the scientific community in December 1997.

The software has been frequently upgraded since 1997.

Version 4.1 was released in March 2003 and is described in this manual.

1.2. Major functions

Movies+ software is used for the acquisition and scientific processing of fishing echo-sounder data on Windows 95, Windows 98 and Windows 2000.

Movies+ functions are the following :

Real time data management

- acquisition of data transmitted by various types of fish echo-sounders, including Micrel Ossian, Simrad EK500 and EK60,
- echo-sounders calibration support,
- synchronized multisounder and multichannel archiving of the acquired data in HAC standard format,
- optimized archive disk space : a threshold may be used to limit the archived samples and archiving can be limited to a given number of samples under the bottom.
- recording of automatic or manual log events.

Offline data management

- offline replay of archived data with various speed : ping by ping, normal, fast or blind (no display)
- interactive data cleanup including bottom noise and shoal correction.

Echo-integration

- available in real-time and replay except for trawled layers echo-integration,
- simultaneous integration of the energy levels of received echoes. Four types of echo-integration are available :
  1. ***depth layers*** : usually up to ten adjacent surface layers and four bottom layers are computed. Advanced users can bypass by this restriction,
  2. ***shoals*** : an automatic shoal detection algorithm can be tuned by the user and up to forty parameters describing each shoal are computed. Shoal classification based on four selected parameters can then be performed.
  3. ***by trawled layers*** : when a detailed description of the trawl geometry is available, bottom and surface layers can be adjusted relative to the head rope.

Ts Analysis by layers (Ek500 and EK60 only) *detailed in document eng_TS.pdf*

- available in real-time and replay
- acquired target strength data can be logged and integrated in customised bottom and surface layers,
- histogram of predefined classes and trajectography of single echoes.

Multi-frequency analysis

- available in real-time and replay
- vertical adjustable resampling and smoothing of all channels
- choice of four operators:
  - sum/difference of several channels
  - sum one channel with a constant
  - multiply one channel constant
  - Mask one channel by another

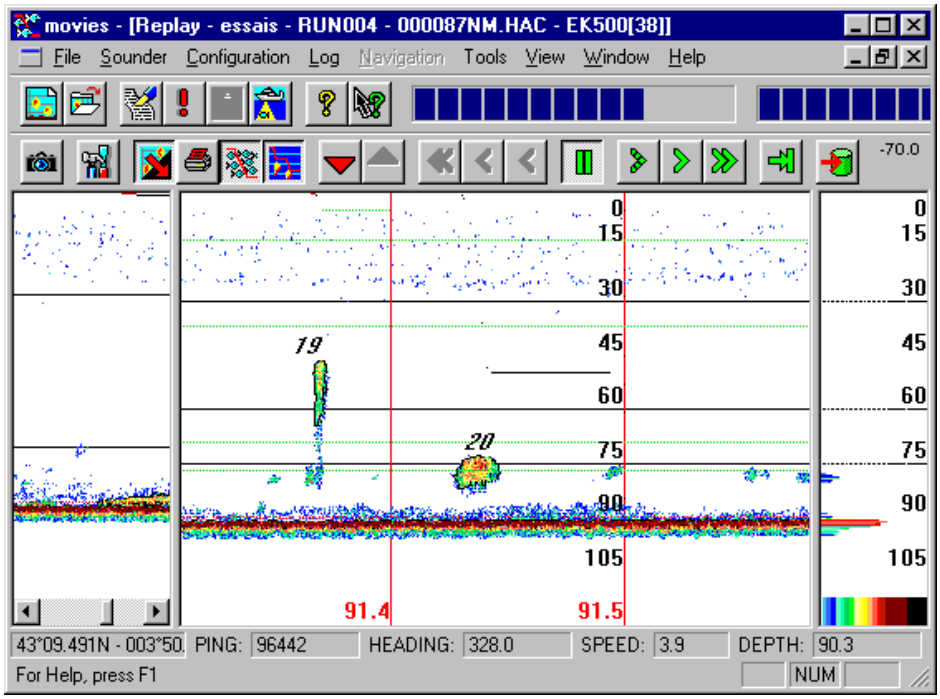


Figure 1 : example of a Movies+ screen showing EK500 data replay and shoal echo-integration

Data display and printing

- each channel is displayed in a dedicated window split into three parts : a scrollable echo history of an adjustable ping number, the most recent pings and an oscilloscope view of the last ping (see figure 1).
- recorded events appear on the screen and can be accessed with a simple click.
- Print is available in two modes : automatic (page by page) or interactive (snapshot),
- user actions include ping and shoal information display, screen capture, zoom, and bottom or samples correction,

Easy installation

- InstallShield based automatic install program,
- Movies+ connection to a sounder requires an Ethernet card and a cable,
- each sounder must be declared in the Movies+ initialization file in order to record its parameters : IP address, port number, number of channels, etc. A dedicated install program guides you during this process (See the "*Program /movies+/utilities/movies.ini utility*" entry from the Start menu).

1.3. High-quality ergonomics

Here are a few examples of Movies+ ergonomic features:

- The user may use all Windows windowing features, and may either: work with a full screen; split a window between a historic part, a current part and an oscilloscope part; move within the historic part using the scroll bar; open as many windows as necessary; easily change their size and convert to icons, without stopping any processing underway,
- A non ambiguous working with :
- a specific tool bar created for each window, to prevent any confusion between tool bars and windows,
- all the information relative to the working context - survey, current directory and file – available in the window title,
- the status of sounders and their active channels available at any time during acquisition and replay.
- the numerous configuration parameters are all centralized in a single index box. Access is therefore fast and easy, with the various index tabs enabling rapid location of a given parameter group,
- there are three parameter saving modes: software, survey or in a user-defined file,
- adaptation of display to lighting conditions, by switching background colour between black and white),
- ability to duplicate pings display to improve data legibility.

1.4. Multisounders and multichannels functioning

In real time, when several frequencies can be used with the sounder, Movies+ is able to display into adjoining windows samples issued from the different channels related to these frequencies. In the same way, Movies+ can take in account data issued from several sounders.

The archived data can be replayed with a perfect synchronization.

The maximal number of acquired channels depends on the capacity of the microcomputer and the size of its screen. There is no limits issued from the software and

for instance, up to 6 frequencies (issued from 3 sounders) are acquired on board Thalassa vessel without any problem.

The configuration of one channel can be extended to all the other or not in order to set a common configuration and then to adjust the settings of one particular channel.

1.5. Adaptability to research requirements

With Movies+, it is the user, and not the software, who determines how the work and data are organized.

The user may choose to work in "daily" or "manual" sessions. In the first case, Movies+ will automatically switch to a new directory each new acquisition day. In the second case, the user will decide when to create new directories by starting or stopping the software. Of course, in the event of restarting after failure, the previous directory may be recovered.

Movies+ can thus adapt to both isolated work requirements (i.e. manual sessions) or to the routine operations of major surveys, for which directories will be automatically managed each day.

Using echo-integration to assess fishing resources requires that acquired data be consistent in terms of distribution and density. Here again, Movies+ can adapt to various contexts and methods. It offers the user the choice of organizing echo-sounder data either according to distance, elapsed time or the number of echo-sounder pings. Similarly, echo-integration calculations and the associated summaries may be performed either according to distance, elapsed time or number of echo-sounder pings.

This is based on a three-level system of data organization according to survey, session and file. The user may use these levels during most non-real time processing to either restrict played-back data to a specific session or file, or extend it to a survey .

The data organization system may be modified. Movies+ archiving functions allow the user to reorganize data as desired, for example to merge data from various surveys into a single survey whose organization he or she will redefine.

1.6. HAC format compatibility

Movies+ archiving and replay format is HAC standard developed from a workshop managed by the Government of Canada Department of Fisheries and Oceans and discussions with various echo-sounder users and manufacturers throughout the world (Simard 97), this format evolves through the ICES Planning Group on HAC data exchange format.

1.7. Data security

Like any software used on shipboard under extreme conditions, Movies+ makes sure to protect users from their own mistakes. During non-real time replay, it is also necessary to protect the initial data set from untimely corrections.

The following simple principles ensure the integrity of captured data:

- Processing (i.e. echo-integration) may be replayed as many times as necessary. It does not modify the initial data,
- When editing echo data for correction, the initial file is saved in a protected .BAK file before the user makes any modification,
- Original frames sent over the vessel's network by the echo-sounders may also be saved.

1.8. Modern software architecture

Movies+ was developed using C++ object-oriented language. In compliance with *Microsoft's "Application architecture*", it was developed using MFC (Microsoft Foundation Classes) libraries.

The "*Component Object Model*" (COM) - which is the foundation of Microsoft's OLE (*Object Linking and Embedding*) inter-applications communication system - enabled the development of a powerful, modular and open-ended architecture in which the data programs communicate with a processing and display server object program.

Thanks to this architecture, there is no consequence about the other parts of the software when a new sounder is taken in account by Movies+. You only must develop a new acquisition « executable » which will be able to get the server to display, echo-integrate and archive the acquire data if the interface specification with this server are satisfied.

1.9. The Movies+ toolkit

The following programs are installed from the Movies+ CD-ROM :

Icon	Name	Role
	movies.exe	Main program
	Ek500.exe	acquire data from EK500 sounders (launched from Movies+ : *Sounder / Start* Menu)
	Ek60.exe	acquire data from EK60 sounders (launched from Movies+ : *Sounder / Start* Menu)
	Ossian.exe	acquire data from Ossian sounders (launched from Movies+ : *Sounder / Start* Menu)

2. Software installation

2.1. Checking your computer's characteristics

- Colour must be encoded with 16 bits (check the Control Panel).
- 256 Mb RAM is strongly recommended for multi-channel acquisition.
- A sufficient disk space must be available in order to archive data. Of course, it is depending of your archiving strategy (archiving threshold, archiving of the bottom or not, …).

Use the configuration panel of your PC to set these parameters.

2.2. Installing the software

Since version 3.1, Movies+ installation procedure is handled by an automatic Setup program located on the CD-ROM and run automatically when the CD-ROM is inserted into the player.

2.2.1. Movies+ program installation

Step 1. Insert the CD-ROM and wait for the Installation program to start. If necessary, run manualy the program “Setup.exe” from the CD-ROM base directory. The following screen should appear :

Figure 2: the Setup screen

Step 2. Read the license agreement and press “Yes” if you accept it

Step 3. Select the installation directory for the programs: the default is “C:\Program Files\Ifremer\Movies+”

Step 4. Select the installation directory for the sample data: the default is “C:\data”

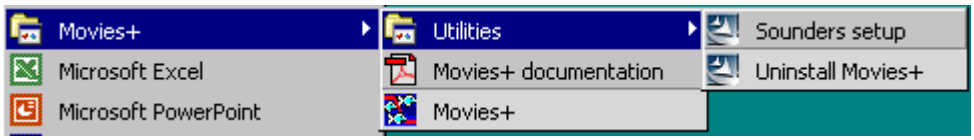
Step 5. Select the type of Install : typical (full), compact (without data and documentation) or Custom. Typical is recommended.

Step 6. Select the name of the program folder : default is “Movies+”
Press “Ok” after the summary display : all the files are copied on disk in the target

directory and an entry is created in the “Start” menu named “Movies+” (by default). The target directory for programs (“C:\Program Files\Ifremer\Movies+”) contains four directories:

Movies+\exe	contains the programs (see : “The Movies+ toolkit”, page 15)
Movies+\dico	contains the data dictionaries required to generate data in HAC format
Movies+\doc	contains all the documentation for the software
Movies+\ini	contains the sounder setup program

The following menu is added to the “Start” menu.



2.2.2. Movies+ configuration

Step 7. The Movies.ini installation program is then run automatically : this program will help you configure Movies+ and in particular describes the echo-sounders.
It can also be started from the “Start” menu entry “Movies+/Utilities/Movies.ini utility”

Step 8. Use this program to add a new sounder, edit or remove an existing sounder from the Movies+ configuration file.

2.3. Connection to a sounder

The main steps are :

1. The installation and configuration of an Ethernet card on the sounder,
2. The installation and configuration of an Ethernet card on the PC Movies+ ,
3. The network installation between the PCs, with a crossed link with RJ45 or with a minihub for instance,
4. The configuration and the tuning of the interface between the sounder software and Movies+.

The three first steps are classical. Step 4 depends on the sounder used, the document "Acquisition specifications for echo-sounders in the Movies+ software" describes the configurations for EK500, EK60 and Ossian sounder.

3. Main uses principles

3.1. The two ways to use Movies+

There are two ways to use Movies+ :

- acquisition in real time,
- offline replay of *.hac* files generally issued from the real time acquisition.

Acquisition in real time :

The user starts the acquisition of a sounder with the Movies+ *Sounder / Start* Menu. If several frequencies are activated, the software will automatically open a window for each acquired frequency. If only one frequency is used, only one window is opened.

During this acquisition in real time, data can be archived into the *.hac* format. If several frequencies from one or several sounders are archived, they are stored into the same set of files. So, in this set, the same file can contain data issued from different channels or sounders, making very easy the synchronization of channels during replays.

Replay of .hac files :

During the replay of *.hac* files, a set of files related to a single survey is opened. This set can be issued from different channels and sounders. According to the choice of the user, this set is :

- either related to all the files of the survey,
- or related to the files of an acquisition session,
- or related to one and the next files of an acquisition session.

During replay, the software automatically opens as many windows than there were different data channels or sounders to produce these data.

Wrong data can be corrected during the replay.

3.2. Multi-windowing examples

The software opens as many windows as there are processes in progress. The user may position these windows as he or she wishes, i.e. in cascade, tile or other form...

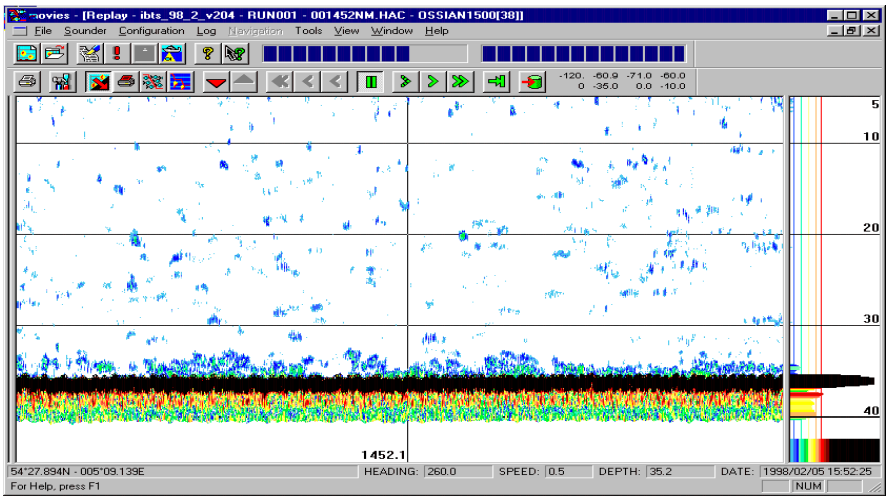


Figure 3 : a single acquisition window

- Replay in a single secondary window expanded to fill the entire Movies window.
- This window is divided into two parts: echoes are displayed on the left and the oscilloscope on the right.

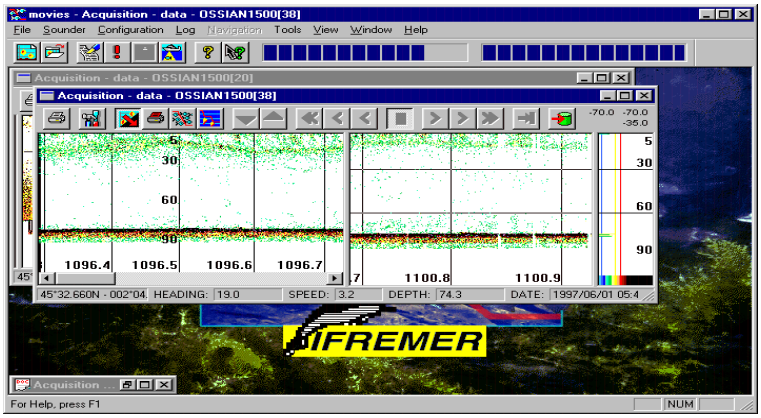


Figure 4 : cascaded windows

- two simultaneous acquisition: 200 kHz channel and 38 kHz channel from the same sounder,
- windows are cascaded,
- in the foreground, the window is split in three parts :
- on the left, the former pings are displayed, on the right, the oscilloscope and between them, the last acquired pings

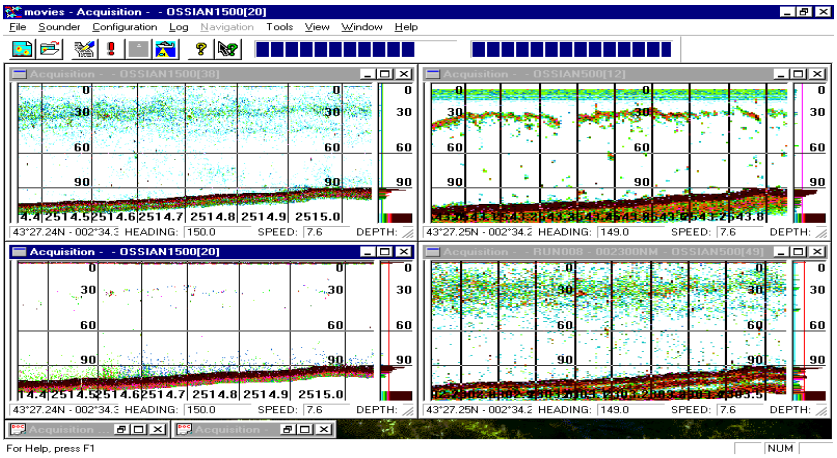


Figure 5 : tiled windows : four simultaneous acquisitions with two frequencies for each sounder.

3.3. Operations about windows

In summary, the following operations are possible:

- opening a new window each time the acquisition of a channel starts,
- moving and resizing windows directly, with the mouse
- cascading of secondary acquisition or replay windows
- splitting of Movies+ window into secondary acquisition or replay windows of equal size
- conversion of the Movies application or secondary windows to icon form
- maximizing of Movies+ windows
- maximizing of a secondary acquisition or replay window to fill the entire Movies+ window
- creation of history sub-windows in replay or acquisition windows,
- scroll-bar movement in history windows,
- etc.

Window, tool bar, pull-down menu and mouse characteristics are identical to those of your computer's most common applications. These characteristics are briefly reviewed below.

3.4. Using the mouse to manipulate windows

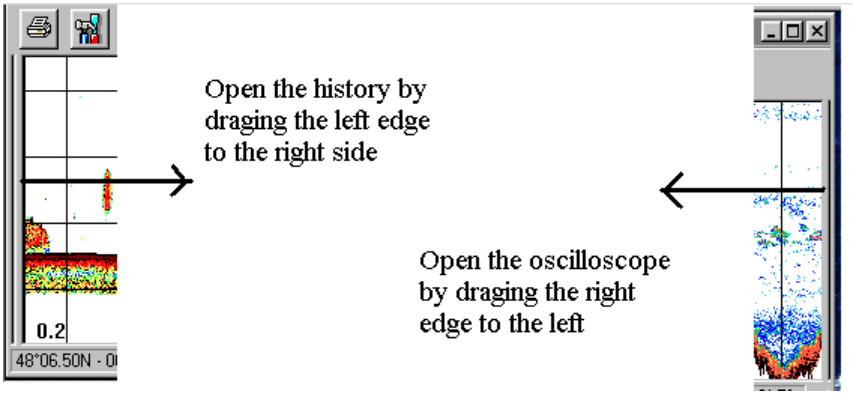
3.4.1. Closing, minimizing and maximizing

These functions are performed the following standard 3 buttons.

3.4.2. Oscilloscope and history display

The oscilloscope window may be opened, closed and sized by clicking the mouse on the right edge of the acquisition and replay windows.

The history window may be opened, closed and sized by clicking the mouse on the left edge of the acquisition and replay windows. The scroll-bar positions the display.



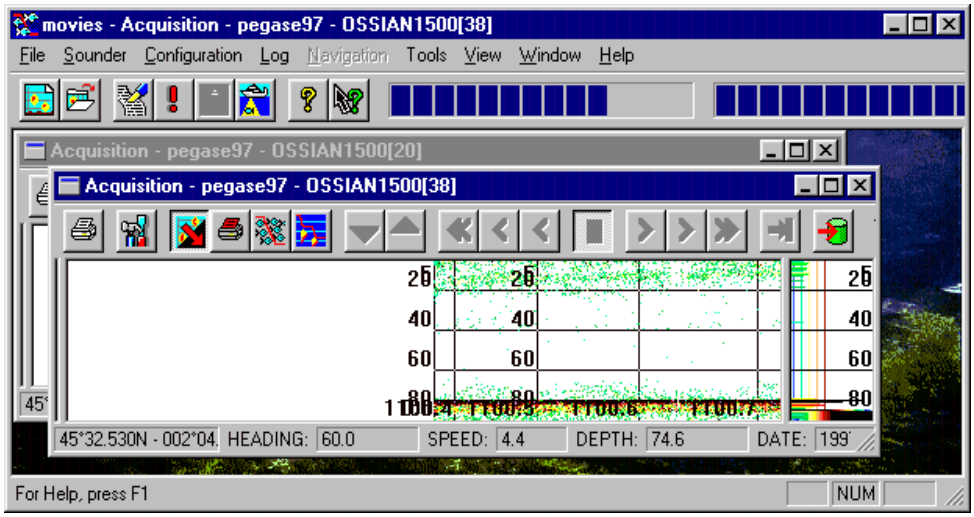
3.5. Title bar information

The titles of the windows provide an information about the context of the processing : current survey, status of the archiving, which channel and sounders are used, …

The title of the application window repeats the contents of the title of the active window (active ie, this one which appears in a stronger blue).

This active window is the last window in which you made an operation : opening of the window, selection from a menu, …

Example:



3.5.1. When Movies+ is started

The title of the application window is empty, excepted the « Movies » reference. There is no other secondary window.

3.5.2. After an acquisition is started

The title contains « Acquisition ».

Then, as soon as Movies+ has identified which sounder and which channel is used, their names are written in the title. Here Ossian 1500 sounder and 38 Khz channel.

These names are given by user when a sounder is created with the Sounder / New menu. They are stored in the movies.ini file.

3.5.3. During archiving

The archiving is made into a file of a session of a survey.

When the archiving is running, Movies+ adds into the title :

- the name of the survey, here pegase97,
- the name of the session, here RUN018,
- the name of the current file, here 001097NM

The title of the secondary window contains too the name of the sounder and the channel, here Ossian 1500 sounder and 38 Khz channel.

3.5.4. During replay of .hac files

The title contains the « Replay » word.

Then, as soon as the replay is started, Movies+ adds in the title :

- the name of the survey, here pegase98,
- the name of the session, here RUN013,
- the name of the readen file, here 001456NM

The file can contain data from several sounders and channels. In this case a window is opened for each channel

The title of the secondary window contains the sounder name and the channel name too, here Ossian 500 sounder and 12 Khz channel.

3.6. Main menu

Main menu functions depend on whether the software was just started, or whether an acquisition or a replay is in progress.

Main menu after software is started

Main menu during acquisition

Main menu during replay

These menus offer the following functions:

3.6.1. File (to replay files)

File is used to access replay functions and includes the following choices:

- *Replay* Starts a replay,
- *Close* Closes the active window,
- *Survey Path* Opens another survey,
- *Print Setup* Adjusts printer,
- *Exit* Quits Movies+.

Files may also be opened from the list of the last accessed files.

3.6.2. Sounder (for real-time acquisition)

Sounder is used to access acquisition functions and includes the following choices:

- *Start* Starts acquisition,
- *Stop Current Sounder* Stops acquisition on current sounder (ie the one corresponding to the active window)
- *Stop All Sounders* Stops acquisition on all sounders

3.6.3. Configuration (to set up software)

Configuration is used to set the software's parameters (refer to the section entitled "Setting up software" page 46)

3.6.4. Log (for managing events)

Log is used to access the event log.

- *View* visualizes one event

- *New event* creates an event, must be used only during acquisition

3.6.5. Tools (to calibrate, capture, zoom, …)

Tools is used to access these functions:

- *Calibration* calibrates one sounder,
- *Zoom/Capture* captures a part of the screen in order to save, correct, zoom, look at in true proportions, …,
- *Tomography* shows a thomographic view of the selected echoes,
- *Identify* when active, each time the user clicks in the echograms windows, a tool tip containing information about the selected echo is displayed,
- *Display results* display echo-integration results in the oscilloscope window.

3.6.6. View (to clear or display tool bars)

View is used to display or hide tool bars and the status bar.

- *Toolbar* hides or display the toolbar,
- *Status Bar* hides or display the status bar
- *Log* display the events log in a window

3.6.7. Windows (to organize windows)

Windows is used to organize the main window and the secondary windows:

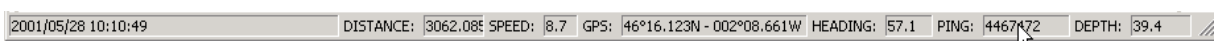
- *New window* opens a new windows and copies the active window
- *Cascade* cascades windows
- *Tile* splits the main window into sub-windows of equal size
- *Arrange icons* aligns window icons at the bottom of the main window
- *Split* divides the active sub-window into two parts: history and current

3.6.8. Help (on-line assistance)

Help is used to access on-line help and general information concerning the software.

- *Help topics* on-line help is not yet fully implemented
- *About Movies+* shows general information about Movies+

3.7. Lower bar information



This bar displays the following information associated to the last ping received :

- date, in yyyy/mm/dd format, and time in hh:mm:ss format,
- distance travelled, in nautical miles,
- vessel speed, in knots,
- position, indicated in degrees, minutes and hundredths of minutes,

- heading, in degrees,
- ping number,
- depth, in meters.

3.8. Main tool bar

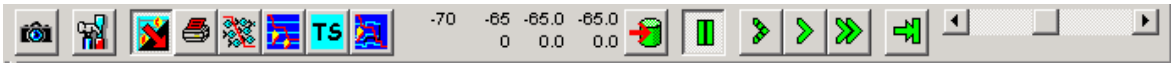
This tool bar allows to access to the main functions and to examine the occupied space by Movies+ in the computer.

1 2 3 4 5 6 7 8

1. starts the acquisition of a sounder chosen in the list of the sounders recorded in the software configuration,
2. starts a replay,
3. opens the events log,
4. records an event into the log,
5. displays general information about Movies+,
6. access the on line help,
7. occupied disk space (a warning blinks when less than x % is available, x is defined in the settings of the survey),
8. occupied internal memory (a warning blinks when less than 10 % of the current disk is available).

3.9. Replay tool bar

This tool bar consists of "On-Off" push-buttons, a VCR bar and different thresholds.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

The "On-Off" push-buttons allow the following operations :

1. prints the contents of the window,
2. displays the configuration dialog,
3. stops / starts display (in order to optimise or not the speed of the processing),
4. starts / stops the automatic printing,
5. starts / stops the echo-integration by shoal,
6. starts / stops the echo-integration by depth layers,
7. starts / stops the TS analysis,
8. starts / stops the echo-integration by trawled layers,
9. thresholds display, in dB with from left to right :
   - archiving threshold,

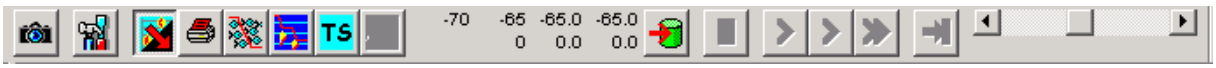
- minimal and maximal values of the displayed echoes,
- minimal and maximal values of the echoes integrated by layers,
- minimal and maximal values of the echoes integrated by shoal.

10. starts / stops the archiving
11. pause,
12. reads the next ping,
13. reads at normal speed,
14. reads at high speed,
15. goes directly to a specific location in the file,
16. scrollbar to change the visualisation minimum threshold

Tip : During the reading of the files, at normal or accelerated speed, the space bar alternatively pauses/restarts the reading in the same way than a Pause button in a VCR.

3.10. Acquisition tool bar

This tool bar consists of the same "On-Off" push-buttons followed by the different thresholds. The VCR push-buttons are not available.



The "On-Off" push-buttons allow the following operations :

1. prints the contents of the window,
2. displays the configuration dialog,
3. stops / starts display (in order to optimise or not the speed of the processing),
4. starts / stops the printing,
5. starts / stops the echo-integration by shoal,
6. starts / stops the echo-integration by depth layers,
7. starts / stops the TS analysis,
8. thresholds, in dB with from left to right :
   - archiving threshold,
   - minimal and maximal values of the displayed echoes,
   - minimal and maximal values of the echoes integrated by layers,
   - minimal and maximal values of the echoes integrated by shoal,
9. starts / stops the archiving,
10. scrollbar to change the visualisation minimum threshold.

4. Data management

4.1. Survey Path: the working directory

The *File / Survey Path* menu, available at any time, allows through the following dialog box :

- To identify the current survey,
- To change the current survey,
- To initialise a new survey.

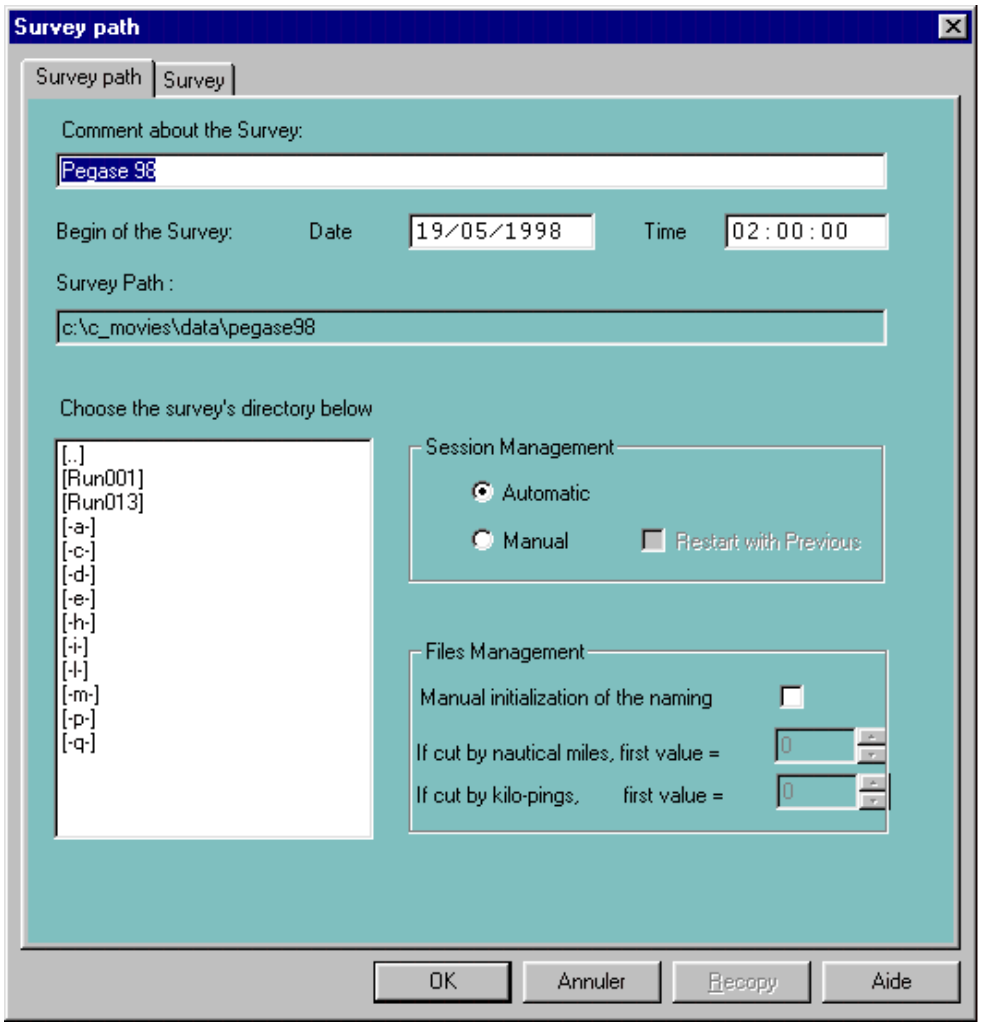


Figure 6: the Survey path dialog

- The comments are associated with the survey and stored in its *campaign.ini* file.
- The survey start time and date are required to number survey runs according to a daily basis.
- The survey path must be that of an **existing** directory. In acquisition mode, this directory will be used to archive your sounder data (*hac* and *evt* and files).

4.2. Session management

To simplify management, survey data is divided into survey runs, and each session is in turn broken down into sub-divisions as decided by the user, either according to travelled distance, elapsed time, or number of pings.

Survey x

Run 1

Files .HAC

1 file EVT

Run 2

Files .HAC

1 file EVT

...

...

Run n

4.2.1. Automatic sessions

These sessions may be managed automatically. In this case, a new session directory is automatically created each survey day, with the name *RUNi*, where "i" is the number of the day counted from the beginning of the survey.

For example, the *RUN005* directory contains all of the data acquired during the 5th day of the survey.

An empty file, called *RUNi.HAC* is also created at the same level than the *RUNi* directory. When you will select this empty file during survey, you will replay automatically all the files of the session. It is the only use of this file.

This operating mode makes it possible to operate the software without operation throughout the survey. It of course allows the software to be started and stopped repeatedly during the survey.

4.2.2. Manual sessions

In this case, a new *RUNi* directory is created **whenever the archive is started**, except if you wish to continue working in the current directory after an incident in this case you must choose “Restart with previous”.

4.2.3. File management

The user may divide a session directory into as many files as he or she wishes. All Hac files names have the same prefix “Survey name”_”Run number”_”date”_

1. then either according to the **distance** travelled: the files names then reflect the number of miles travelled and the division method :

   The user selects the division unit and may also redefine the counter's initial value whenever the software is started.

   Example of a division every 10 miles:

   RUN001

   PEGASE98_001_19980519_0100NM (NM stands for *nautical miles)*
   PEGASE98_001_19980519_0110NM
   PEGASE98_001_19980519_0120NM
   ...

2. or according to **time** (UTC):

   Example of a division every hour. The 1st directory corresponds to the data acquired on the 3rd survey day, starting at 11h 10min 0 sec ...

   RUN003

   PEGASE98_003_19980521_111000
   PEGASE98_003_19980521_121000
   PEGASE98_003_19980521_131000
   ...

3. or according to the **number of pings** received:

   Example of a division every 5000 pings:

   RUN004

   PEGASE98_004_19980522_0125KP *(KP* stands for *Kilo-Pings)*
   PEGASE98_004_19980522_0130KP
   PEGASE98_004_19980522_0135KP
   ...

4.3. Creating a new survey

(This paragraph explains how use the dialog box *Survey Path* – page 28)

This dialog box is systematically proposed at the first time the user archives data.

1. First of all a directory must be created using the Windows Explorer

2. The *Survey Path* dialog box is then used to select this directory by navigating in the sub-window provided for this purpose: the directory path will then be displayed in the *survey path* field (note: this field cannot be directly written into),
3. Clicking on the *Starting time* and *starting date* edit boxes will automatically update them. This survey start date is mainly used to calculate the survey day number, which is included in the name of the directory for this day, if this directory is automatically managed.,
4. A comment can help to identify the survey : edit box *Comment,*
5. The *Session management* option buttons are used to choose between the two modes for the management of sessions : automatic or manual,
6. The *Files management* frame is useful when files are cut by distance or ping . In these cases, user can choose between a manual initialisation of the distance or the number of pings and an automatic management of these values. Thanks to the *Manual initialisation* check box, users can select this option. With the manual initialisation, the naming of the first file takes in account the distance value or the ping value written in the edit box. If the value involves an existing file, this file will be appended.

4.4. Setting up the survey

The second part of the dialog box titled *Survey*, is used to define the archiving options : archiving threshold, how archive the bottom, options to cut files …

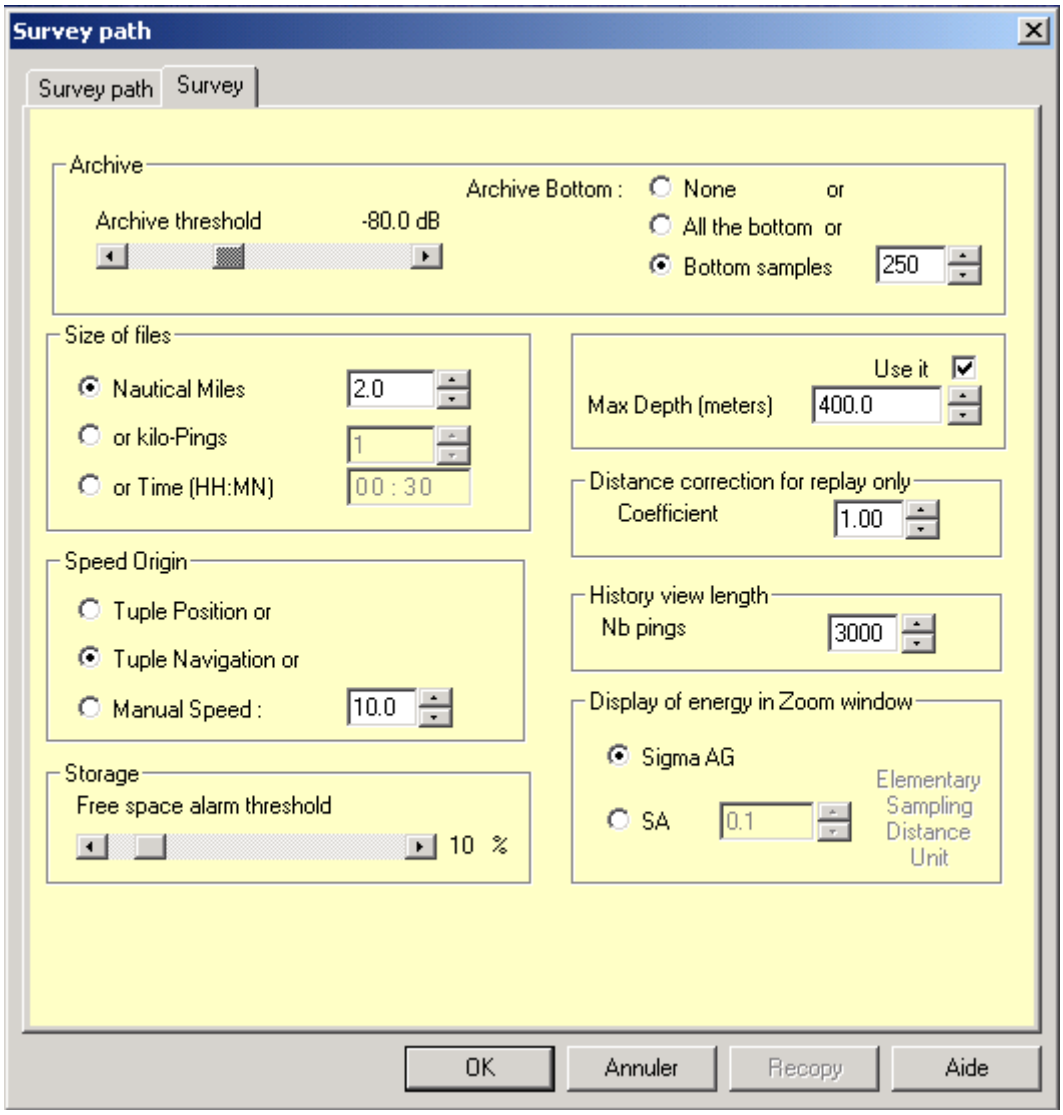


Figure 7: the Survey dialog

4.4.1. Setting the archiving threshold

The archiving limit restricts archive storage to significant echoes only. This enables users to save considerable archiving space. This parameter must of course be carefully determined during acquisition, since unarchived echoes are irrecoverably lost.

4.4.2. Setting bottom archiving

Selecting between optional, total or limited bottom archiving is another powerful way to optimise your archiving requirements.

4.4.3. Selecting and defining file divisions

This parameter is used to both select the file division method and specify the maximum file size in a proper unit.

The *Management data* chapter introduces to the different ways to cut files.

4.4.4. Controlling the speed

Movies can use either the position (longitude/latitude) or speed included in tuple navigation of HAC format to process echo-integration.

The manual speed allows to simulate the moving of the vessel for instance, during calibration operations.

4.4.5. Maximal depth

Two strategies are available to manage the loss of bottom.

- if the *Use it* check box is not set, the last bottom depth value given by the sounder will be used as a virtual depth by the echo-integration algorithms,
- if the *Use it* check box is set, the value defined in the edit *Max Depth* will be used as the maximal virtual depth by the echo-integration algorithms. In this case also, when EK500 algorithm does not recognise bottom and gives a "0" as depth, Movies+ takes this *Max Depth* as the bottom depth.

Anyhow all the bottom echoes acquired by the sounder can be archived. So in case of bottom loss, if you have chosen to archive all the bottom echoes during acquisition, you can change your strategy during replay and for instance choose another *Max Depth* value.

4.4.6. Correcting the distance

This coefficient is used to correct the distance travelled, in the event of speed-over-ground bias caused by the speed log or the current

It is used to display the distance scales and to calculate the echo-integration when they are based on distance.

4.4.7. Number of pings in history

This setting defines for each channel the number of pings to display in history.

4.4.8. Free space alarm threshold

This setting defines the ratio of free space allowed on current disk, a blinking button informs you if less space is available.

4.4.9. Display of energy in zoom window

You can choose to display energy in zoom window either in terms of σ_{ag} or s_A for a predefined ESDU(elementary sampling distance unit), you may want when wanting to combine shoal and layer echo-integration for stocks assessment.

4.5. Saving the survey settings

All these settings are stored at the survey level (ie in the folder of the survey) in the *campaign.ini* file, most of them cannot be changed if data has already been archived in this survey.

4.6. Exchanging data

The data division in sessions and files makes easier the files management and the exchanges between users.

You can exchange :

1. All the data of a session :

   copying all its directory plus the *ini* files of the survey (*campaign.ini*) into a new survey directory,
   then using the *File / Survey* path menu to change the path and the comment relative to the survey.

2. One or some of the files of a session :

   at first, create a new survey directory, and copy there the *ini* files of the survey (*campaign.ini*), create a new *RUN00i* directory and copy there the *.hac* files and the *nav* and *evt* files
   then use the *File / Survey* path menu to change the path and the comment relative to the survey.

5. Acquisition

5.1. Preparation

Before you can begin to acquire an echo-sounder, you must first:

1. configure the sounder correctly
   This is explained in the paragraph "*Connection to a sounder"* page 17
2. create a directory to receive the data from the current survey,
3. initialise this directory and set parameters for archiving.
   This is explained in paragraphs: "*Creating a new survey"* page 30 and "*Setting up the survey"* page 31.

5.2. Launching the acquisition of a sounder

The menu *Sounder / Start* is used for starting the acquisition of one of the sounders described in the configuration.

1. The acquisition window will open. (If the sounder is operating in multi-frequency, one acquisition window will open for each active frequency.)
2. The icon of the control window of the sounder appears at the bottom of the application window.
3. The sounder acquisition program will be run and its window, reduced to the minimum, appears alongside the Movies+ window. This window can be reduced to an icon.

*Figure 8 :*Window of the acquisition program

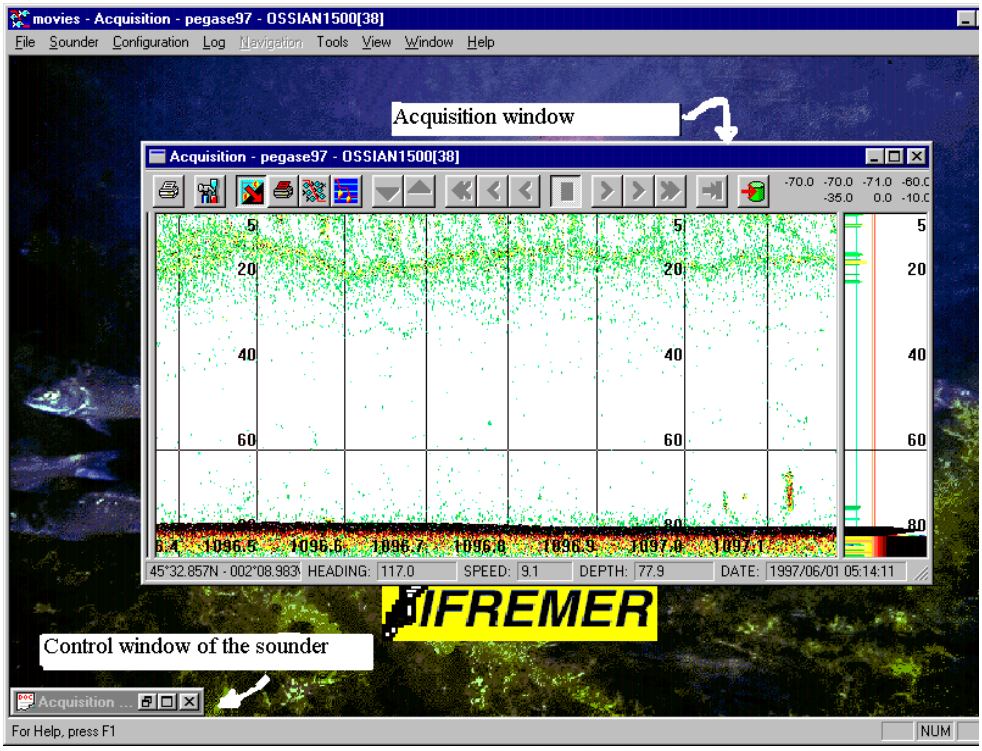

movies - Acquisition - pegase97 - OSSIAN1500[38]
File Sounder Configuration Log Navigation Tools View Window Help
Acquisition window
Acquisition - pegase97 - OSSIAN1500[38]
45°32.857N - 002°08.983 HEADING: 117.0 SPEED: 9.1 DEPTH: 77.9 DATE: 1997/06/01 05:14:11
IFREMER
Control window of the sounder
Acquisition ...
For Help, press F1
NUM

Figure 9: Movies+ Window during acquisition

5.3. The acquisition window

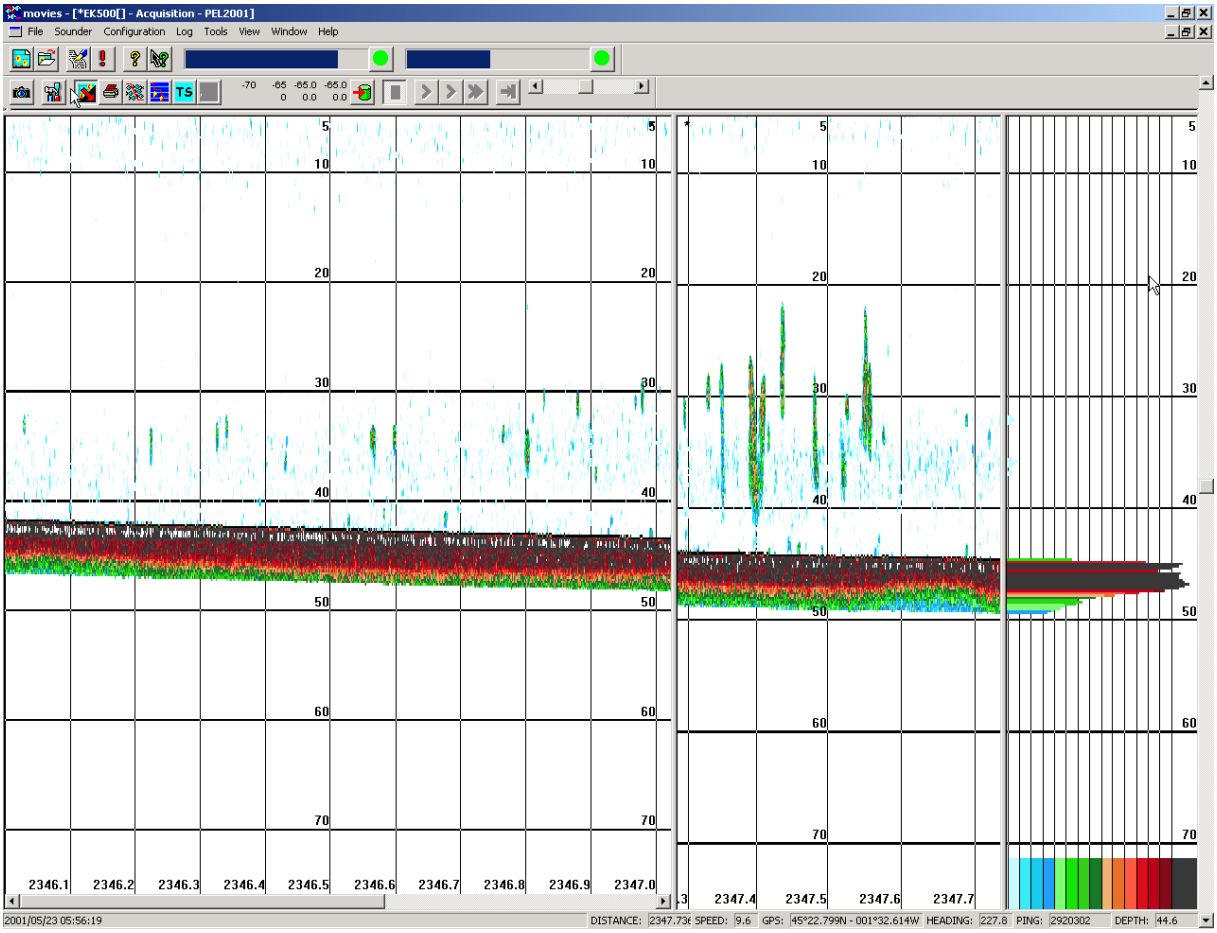


Figure 10: The acquisition window

This window consists of three parts:

- on the left, a historical part on which the last 3000 pings can be displayed (this limit can be extended see 4.4.7). The user can move around within it, using the horizontal scroll bar. This historical part is regularly updated by eliminating the oldest pings. An empty space then appears in the left-hand side which shrinks as more pings arrive, until the time comes to delete another batch of the oldest ones. (To find out how to display this history, see the paragraph "*Oscilloscope and history display*" page 22)
- the central part displays new pings as they are acquired,
- on the right, the oscilloscope displays the energy levels of the echoes from the latest ping using the current colour palette settings.

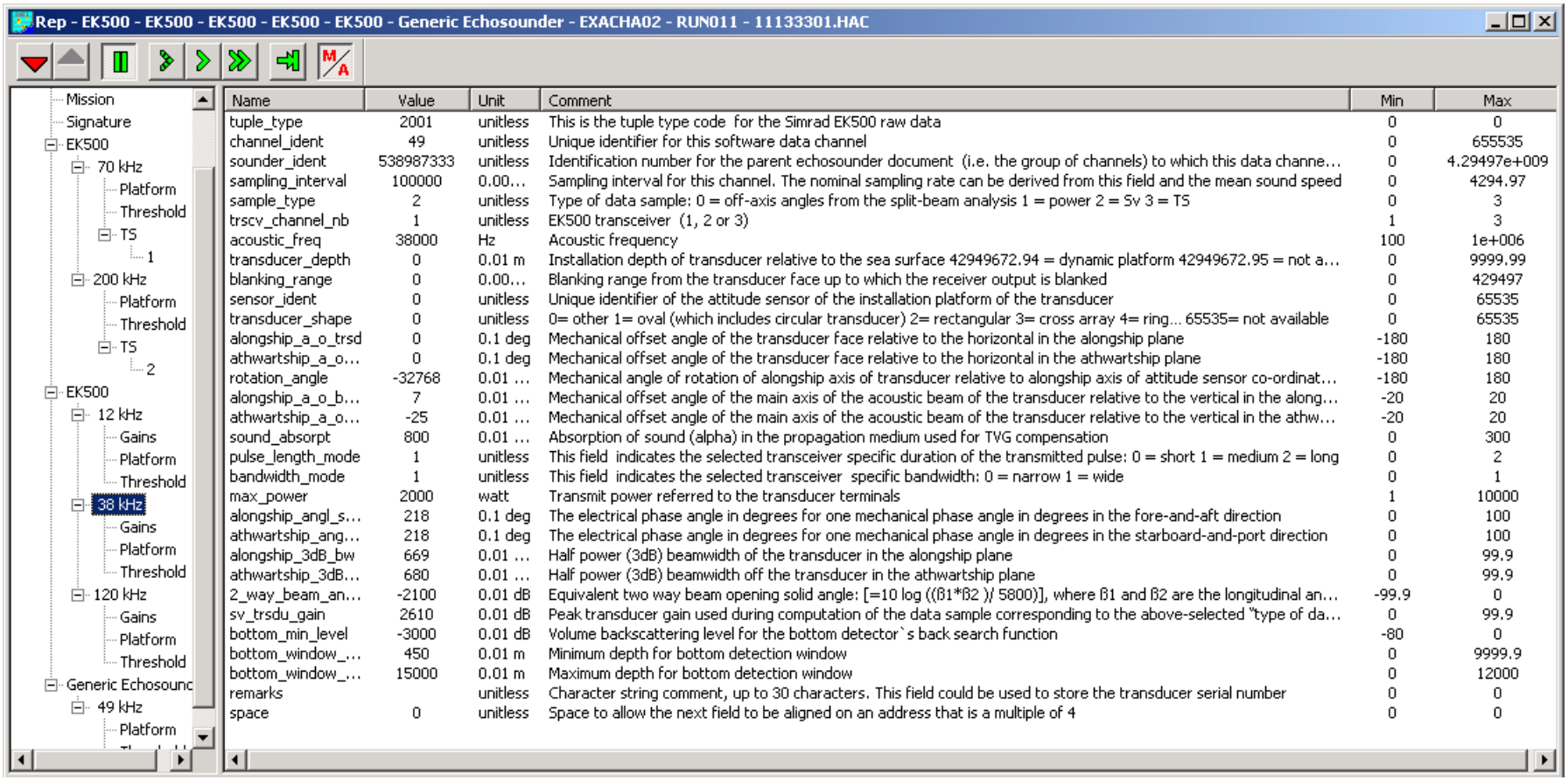
A vertical scrollbar enables you to change the visualized height in each of these three parts of the window.

Indications of distance, in nautical miles to the nearest tenth, are displayed at the bottom of the historical window (here *1097.2, 1097.3 etc.*).

Indications of depth in metres are permanently displayed to the right of the oscilloscope and at regular intervals among the echoes.

5.4. The control window of the sounder

If you open the control window of the sounder, you will see the latest information about the sounder and the active channels.



Name	Value	Unit	Comment	Min	Max
tuple_type	2001	unitless	This is the tuple type code for the Simrad EK500 raw data	0	0
channel_ident	49	unitless	Unique identifier for this software data channel	0	655535
sounder_ident	538987333	unitless	Identification number for the parent echosounder document (i.e. the group of channels) to which this data channe...	0	4.29497e+009
sampling_interval	100000	0.00...	Sampling interval for this channel. The nominal sampling rate can be derived from this field and the mean sound speed	0	4294.97
sample_type	2	unitless	Type of data sample: 0 = off-axis angles from the split-beam analysis 1 = power 2 = Sv 3 = TS	0	3
trscv_channel_nb	1	unitless	EK500 transceiver (1, 2 or 3)	1	3
acoustic_freq	38000	Hz	Acoustic frequency	100	1e+006
transducer_depth	0	0.01 m	Installation depth of transducer relative to the sea surface 42949672.94 = dynamic platform 42949672.95 = not a...	0	9999.99
blanking_range	0	0.00...	Blanking range from the transducer face up to which the receiver output is blanked	0	429497
sensor_ident	0	unitless	Unique identifier of the attitude sensor of the installation platform of the transducer	0	65535
transducer_shape	0	unitless	0= other 1= oval (which includes circular transducer) 2= rectangular 3= cross array 4= ring... 65535= not available	0	65535
alongship_a_o_trsd	0	0.1 deg	Mechanical offset angle of the transducer face relative to the horizontal in the alongship plane	-180	180
athwartship_a_o...	0	0.1 deg	Mechanical offset angle of the transducer face relative to the horizontal in the athwartship plane	-180	180
rotation_angle	-32768	0.01 ...	Mechanical angle of rotation of alongship axis of transducer relative to alongship axis of attitude sensor co-ordinat...	-180	180
alongship_a_o_b...	7	0.01 ...	Mechanical offset angle of the main axis of the acoustic beam of the transducer relative to the vertical in the along...	-20	20
athwartship_a_o...	-25	0.01 ...	Mechanical offset angle of the main axis of the acoustic beam of the transducer relative to the vertical in the athw...	-20	20
sound_absorpt	800	0.01 ...	Absorption of sound (alpha) in the propagation medium used for TVG compensation	0	300
pulse_length_mode	1	unitless	This field indicates the selected transceiver specific duration of the transmitted pulse: 0 = short 1 = medium 2 = long	0	2
bandwidth_mode	1	unitless	This field indicates the selected transceiver specific bandwidth: 0 = narrow 1 = wide	0	1
max_power	2000	watt	Transmit power referred to the transducer terminals	1	10000
alongship_angl_s...	218	0.1 deg	The electrical phase angle in degrees for one mechanical phase angle in degrees in the fore-and-aft direction	0	100
athwartship_ang...	218	0.1 deg	The electrical phase angle in degrees for one mechanical phase angle in degrees in the starboard-and-port direction	0	100
alongship_3dB_bw	669	0.01 ...	Half power (3dB) beamwidth of the transducer in the alongship plane	0	99.9
athwartship_3dB...	680	0.01 ...	Half power (3dB) beamwidth off the transducer in the athwartship plane	0	99.9
2_way_beam_an...	-2100	0.01 dB	Equivalent two way beam opening solid angle: [=10 log ((ß1*ß2)/ 5800)], where ß1 and ß2 are the longitudinal an...	-99.9	0
sv_trsdu_gain	2610	0.01 dB	Peak transducer gain used during computation of the data sample corresponding to the above-selected "type of da...	0	99.9
bottom_min_level	-3000	0.01 dB	Volume backscattering level for the bottom detector`s back search function	-80	0
bottom_window_...	450	0.01 m	Minimum depth for bottom detection window	0	9999.9
bottom_window_...	15000	0.01 m	Maximum depth for bottom detection window	0	12000
remarks		unitless	Character string comment, up to 30 characters. This field could be used to store the transducer serial number	0	0
space	0	unitless	Space to allow the next field to be aligned on an address that is a multiple of 4	0	0

Figure 11 : Control window of the sounder

The contents of this window exactly match those of the items *sounders* and *channels* recorded in the *.hac* files.

Each time one parameter changes a beep indicates this change, if the button is pressed.

5.5. The tool bar and the functions available

The tool bar consists of a set of on/off buttons, and a set of thresholds. The tape-recorder controls are not accessible.

(for a complete description, refer to paragraph "*Acquisition tool bar*" page 27)

5.6. Halting acquisition

Acquisition must be halted via the commands "*Sounder / Stop Current Sounder"* and *"Sounder / Stop All Sounders"*.

If there are several sounders acquired by Movies+ at this moment, "Stop current sounder" will halt acquisition of the sounder which has an active window (acquisition or control).

This command closes all the windows relating to the sounder. It also stops the acquisition program and its windows will also disappear.

5.7. The acquisition program

In normal use, this program operates transparently, being run and stopped automatically by the Movies+ software.

In case of problems, advanced users have access to control and frame-archiving functions, which will give detailed help with diagnosis.

Other users may appreciate the option of simulating the acquisition of sounders on shore.

For further information on these options refer to the section 12.1 "*Acquisition Software, the example of Ossian sounders*"

6. Replay

Movies+ can replay acquisitions at various speeds (step by step, normal and fast), and the user can then rapidly redo echo-integration calculations.

The user may use all of the features enabled by the data organisation system, including: full survey replay, replay of one or more sessions, replay of one or more session files.

6.1. Launching the replay

You can open files in three different ways:

- with the *File / Replay* menu ; the proposed dialog box allows to open *hac* file,
- By selecting one of the files in the list of the last opened files proposed at the end of the *File* menu.
- By double-clicking on an .HAC file from the Windows Explorer.

Movies+ replay can work at the following three levels :

- Survey : the files from the different sessions of the survey will be automatically put in chain. To do that, you must open the empty file *survey.hac* after starting Movies+,
- Session : all the files from the selected session will be automatically put in chain. You must open the empty file *RUN00i.hac* after starting Movies+,
- File : you must open a *hac* file after starting Movies+, the next files in the session will be automatically put in chain and processed at the end of the selected file.

What happens then:

- After the opening of files, a replay window opens. Its title contains the « Replay » word, the name of the survey, the current session and the name of the current file followed by the name of the sounder. The VCR tool bar allows to start reading.
- When you start reading an HAC file, Movies+ asks whether you wish to replay only this file or this file and the following files.
- As during acquisition, the icon of the control window of the sounder appears at the bottom of the application window.
- If the file contains data from several sounders and channels, then each time data issued from a new channel or a new sounder are read, a new window opens and its title contains the name of the concerned sounder and channel as they are declared in the configuration.
- The display in all the windows is synchronized and the operation on a VCR toolbar has repercussions on all the windows.
- A control window of the sounder is available. It contains information about the sounder and the active channels.

6.2. The replay window

This window is displayed after a replay has been started and its data selected. It is identical to the acquisition window, except for the tool bar, which is explained below .

6.3. The tool bar and the functions available

The tool bar consists of a set of on/off buttons, and a set of thresholds, (for a complete description, refer to paragraph "*Replay tool bar*" page 26).

6.4. Replaying facilities

6.4.1. Go to

You can move quickly to a specific location in a RUN and then start the replay using the button.

You can set the start value in the limits extend of the RUN, this value can be define in ping or time,

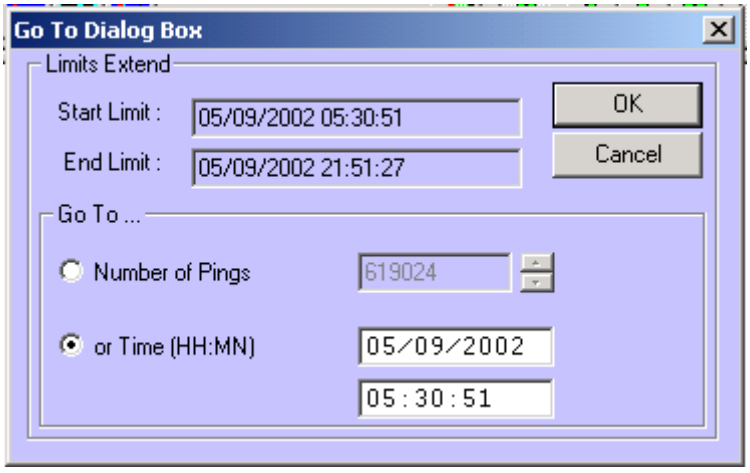


Figure 14 : Go To dialog box

6.4.2. Supervised replay

Use the *Configuration / Run Sequence menu to* choose the sequences you want to replay and with possibility to apply echo-integration on.

This function applies only to the active channel.

You can choose up to ten sequences defined in ping or time, but only of the same kind as the files (cf . supra for *Go to*). You can save these information into a ".spr" file.

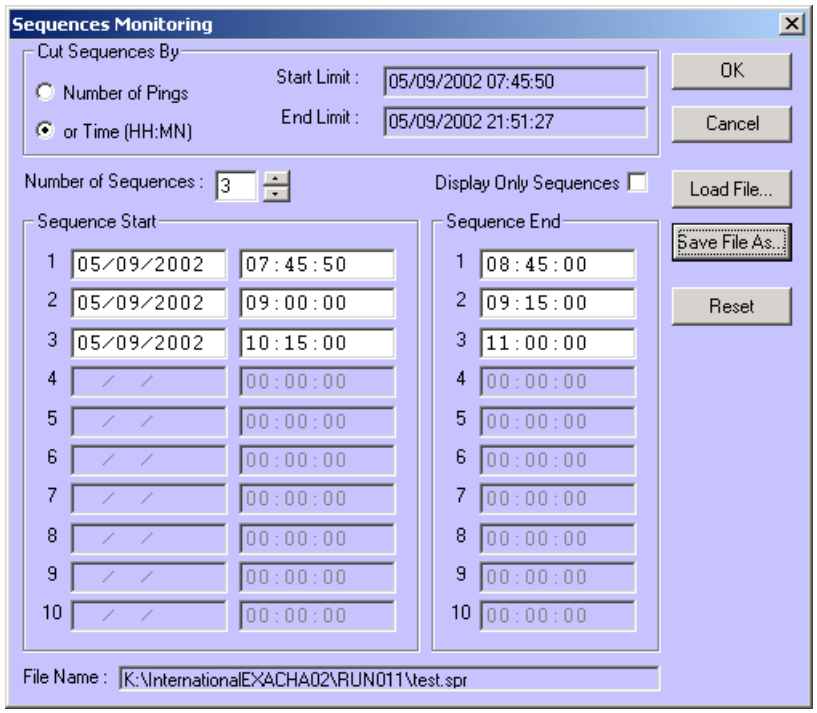


Figure 15 : Sequences monitoring dialog box

Choosing "*Display Only Sequence*" will show only the selected sequences otherwise the whole pings will be shown but those not contained in a sequence will be displayed in black and white.

Echo-integration concern only the pings in sequences.

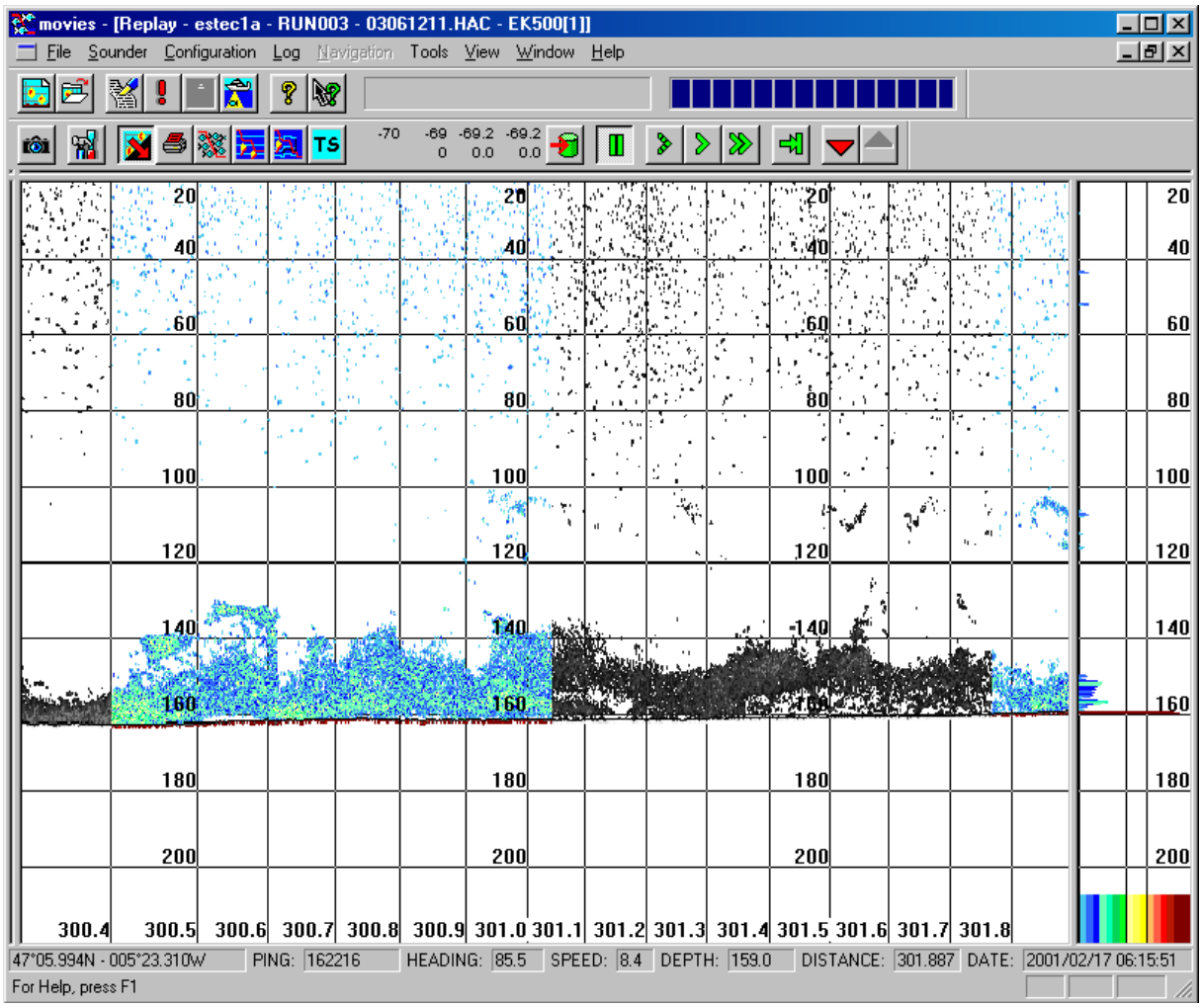


Figure 16 : Running sequences with “Display Only Sequences” inactive

7. Setting up the software

7.1. Parameter groups

Six parameter groups allow to adapt software to many different situations. They include:

1. display parameters,
2. colour map,
3. echo-integration by shoal,
4. echo-integration by depth layers,
5. echo-integration by trawled layers,
6. Ts analysis.

These parameter groups are accessible via the *Configuration* dialog box.

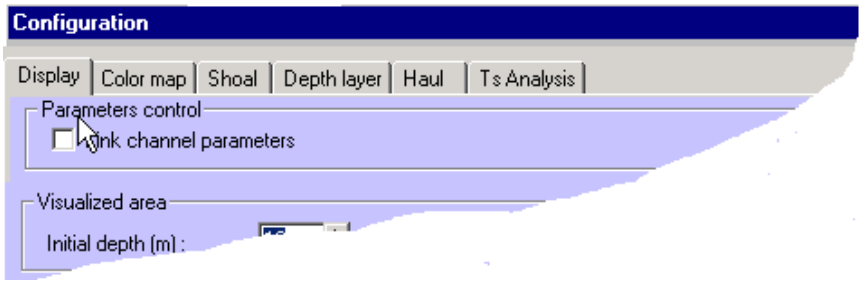


Figure 17 : control dialog box

7.2. Parameters management

These parameters are saved by group in *.ini* files at the following levels :

- software: into the *movies.ini* file generally stored in the *C:\Windows* directory,
- survey: into the *campaign.ini* file stored in the survey directory
- session: into the *session.ini* file stored in the directory of the session,
- user: freely defined by user.

7.2.1. Parameter management at the survey level

- The survey directory is initialised when the *File / Survey Path* dialog box is used for the first time with the survey directory : see the paragraph relative to the "*Data management"* page 28.
- When a new survey is initialised, all the configuration parameters archived at the software level (in the *movies.ini* file) are used by default and copied at the survey level (in the *campaign.ini* file).

- At the survey level, parameters are common for all channels.

The true persistence of the parameters (ie the saving of the campaign.ini file) occurs when exiting the survey.

7.2.2. Parameter management at the session level

- When a new session is initialised, all the configuration parameters archived at the survey level (in the *campaign.ini* file) are used by default and copied at the session level (in the *session.ini* file).
- At the survey level parameters for each channel of each sounder are saved separately.

The true persistence of the parameters (ie the saving of the session.ini file) occurs when exiting the session.

While archiving is not launched parameters of each channel are kept in memory until they can be saved in a session.

7.3. Linking channel parameters

All the settings of one channel (except the name of the result files) can be extended to all the other channels thanks to the link channel parameters function (available in the display parameters window). If the check box is set when a change occurs fore one setting of the checked channel it applies to all the other channels. You can then still personify the channels not checked. It enables you to make a global setting for all the channels and then personify one specific channel.

7.5. Specific saving and copying of configuration parameters

The modification of a parameter group is systematically saved at the session level,.

Configuration parameters may also be saved at the survey and software levels, or in any file after modification by the user.

The user may also request that parameters previously saved at these levels be used.

This is done using the following dialog box, which is displayed when *Recopy* at the bottom of the *Configuration* box is selected.

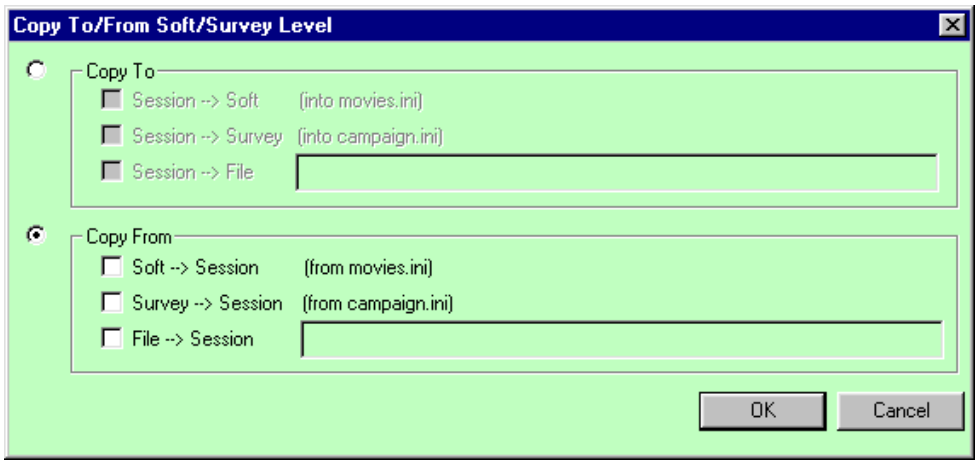


Figure 18 : Copy to/from parameters dialog

Copy to :

- session -> survey: save with the survey, the new parameters are saved in the campaign.ini file of the survey's directory,
- session -> software: save in C:\Windows\Movies.ini,
- session -> file: save in a user-defined file.

Copy from :

- Survey -> session: copy from the survey.ini file of the current survey
- Software -> session: copy from the software's configuration file (the C:\Windows\movies.ini file)
- File -> Session: copy from a file saved by the user.

Copying only affects the parameter category in the foreground when the copy is made.

At the survey level and at the software level, parameters are common for all channels.

To access configuration parameter save/restore functions, click on the *Recopy* button at the bottom of the index box that presents the configuration parameters.

7.6. Setting up the survey

These parameters are explained in the "*Data Management"* chapter page 28.

7.7. Setting display parameters

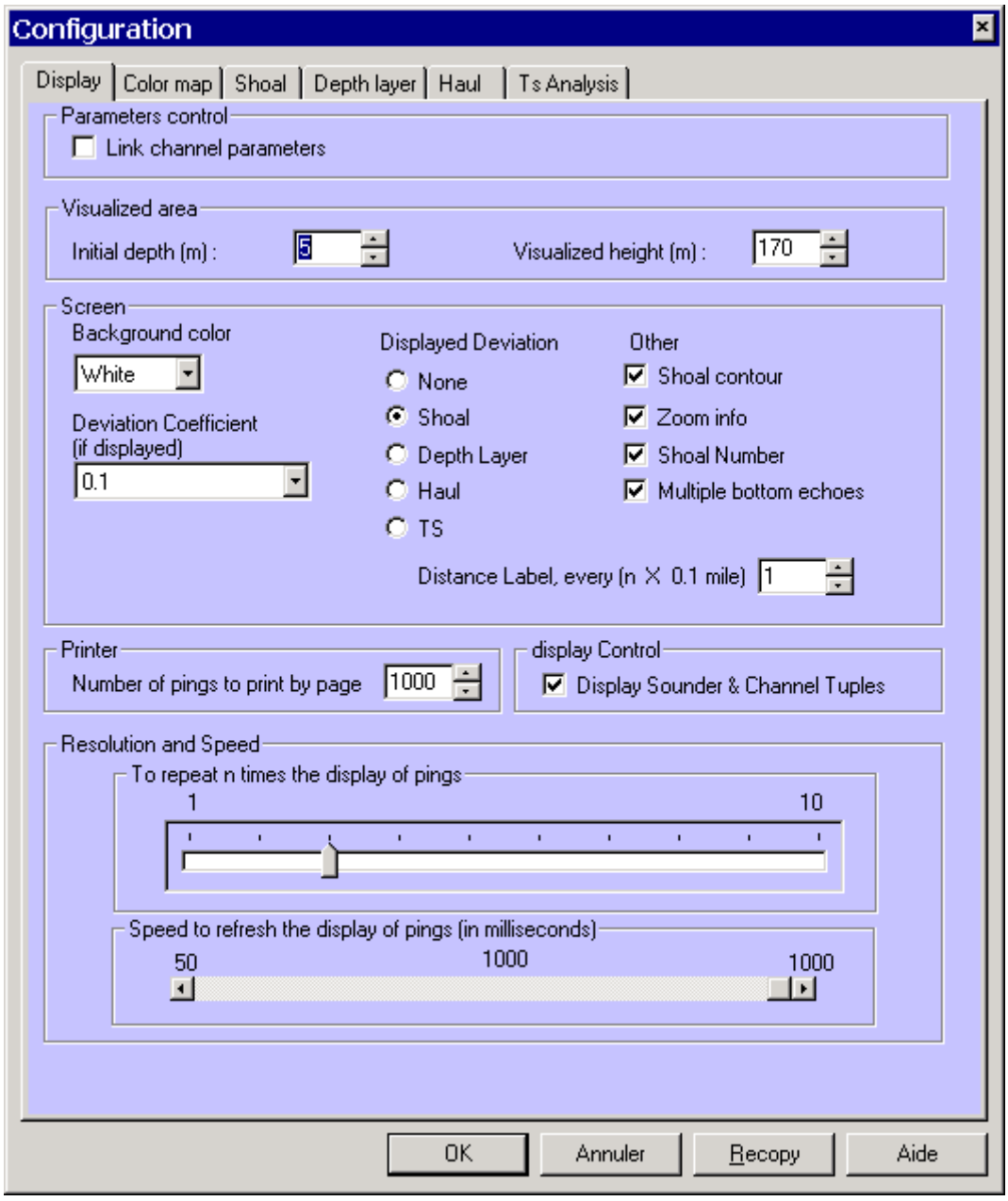


Figure 19 : Display configuration parameters

7.7.1. Specifying the displayed depth layers

To define the displayed depth layer, the layer's initial depth and height must be modified in the *Visual area* panel.

7.7.2. Adjusting the background colour

Select the desired colour (black or white) in the list proposed.

7.7.3. Displaying deviations ,shoal contour and Multiple Bottom Echoes

In the *Screen* panel:

1. *Deviation*: the type of deviation displayed must be selected (ESU distance bars and labels will be printed in red for the chosen echo-integration). Do not forget to also assign a value to the *deviation coefficient* that adjusts the deviation's "y" scale.
2. *shoal contour*: set the check box to choose your option,
3. *bottom zoom* : not operational
4. *Multiple bottom echoes:* set the check box to choose your option

Warning : in order to display multiple bottom echoes at a valid depth the transducer depth needs to be set correctly (see transducer_depth field in tuple channel in the sounder control window).

7.7.4. Adjusting the distance bars and labels

If the distance bars overlap due to a high speed of the boat combined with a low ping rate, you can avoid it with this tool :

In the Screen panel, adjust the *Distance Label* parameter.

7.7.5. Defining the number of pings printed per page

This number can be adjusted thanks to the dedicated edit box.

7.7.6. Displaying or not sounder and channel tuples

If “Display Sounder & Channel Tuples” information about sounders will no longer be printed in the sounder control window.

7.7.7. Setting echo resolution

Each ping display may be magnified up to 10 times using the magnifying bar, to improve display on monitors with excessively fine resolution or to easily detect empty pings.

7.7.8. Adjusting the ping display refreshing frequency

At normal speed a latency time of 50 to 1000 milliseconds between the processing of each ping is provided, both for acquisition and replay.

This parameter may in particular be used during replay to speed up or slow down processing.

During acquisition, it may be used to decrease your computer's workload if necessary, particularly at slow cadence rates.

(The replay tool bar also has means of immediately modifying this latency time. Refer to the Slow and Fast buttons :*red vertical arrow* and *green vertical arrow* respectively).

7.8. Setting colour palette parameters

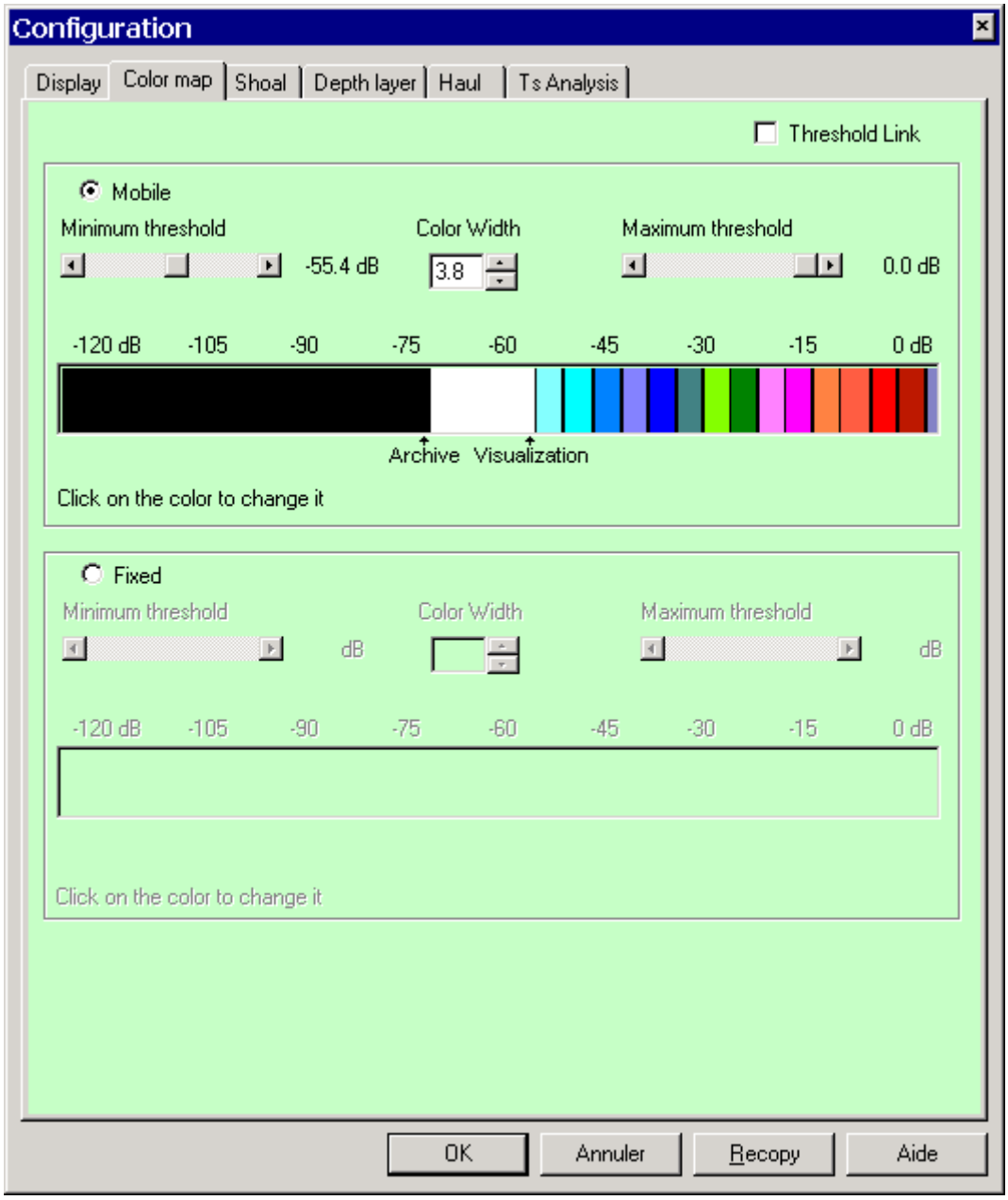


Figure 20 : Colour map configuration dialog

7.8.1. Linking thresholds

When checked, this check box assigns the same low and high threshold for :

- display,
- echo-integration by depth layers,
- echo-integration by shoal.
- echo-integration by trawled layers.

- TS analysis.

When this option has been chosen, a modification of a threshold in a box automatically involves the same modification in the associated boxes.

7.8.2. Mobile palettes

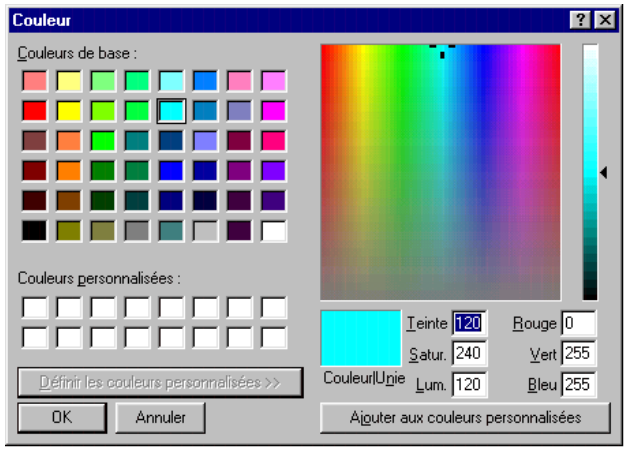
The user specifies the value of the echoes he wishes to display by determining their minimum and maximum. This range is automatically divided into 16 smaller equal intervals (for example: from -70.4 to -67.8 dB, from -67.8 to -65.2 dB, etc.) and a different palette colour is assigned to each interval. This palette is referred to as "mobile" because the colour scale automatically adjusts to the colour interval the user wishes to display.

7.8.3. Fixed Palettes

The user specifies the value of the echoes he wishes to display by determining their minimum and maximum. This range is automatically divided into 16 smaller equal intervals (for example: from -70.4 to -67.8 dB, from -67.8 to -65.2 dB, etc.) and a different palette colour is assigned to each interval. This palette is referred to as "fixed" because the colour scale does not adjusts to the colour interval the user wishes to display. If the user specifies a threshold of visualization superior of the archive threshold the colors between both thresholds are replaced by white color

7.8.4. Changing the proposed palette colours

1. click on the colour to be modified and the following colour table will be displayed.
2. select one of the colours from the *basic colours* grid by clicking on it. It will then replace the colour to be modified,



7.8.5. Using a custom palette

- Define each of the sixteen custom colours one by one:
  - select the first box of the *custom colour* grid.
  - select its characteristics by clicking on the desired color in the right palette, adjust its characteristics using the keyboard if necessary: red, green and blue intensity; shade; saturation and brightness.
  - click on *Add* to assign the colour to the first box of the grid.
  - proceed this way to define the other colours assigned to the 16 custom colour boxes.
  - then assign each custom palette colour to the Movies colours using the same procedure as for the *basic colours* grid

8. Processing

The five main processes of Movies+ are described in separate documents:

EI shoal : “Echo-integration by shoal using Movies+ software”,

EI layer : “Echo-integration by depth layers using Movies+ software”,

EI trawled layers : “Echo-integration of trawled layers using Movies+ software”,

TS analysis : “TS data analysis using Movies+ software”,

Multi-frequency analysis : “Multi-frequency analysis using Movies+ software”.

9. Display tools

9.1. Calibration

The document "Acoustic calibration on a standard spherical target" describes the procedure to calibrate a sounder with Movies+.

9.2. Zoom and capture

This chapter presents all the functions accessible from the menu *Tools / Zoom/Capture*. These functions allow you to perform the following operations:

- capture part of the screen,
- enlarge this part,
- adjust to real proportions, i.e. with the height and width to the same scale,
- correct the seabed
- correct invalid echoes
- make manual classification of aggregate backscattering cross-section,
- save in the form of .MatH files the matrix of the amplitude (in volts) of all the echoes of the zoom (importable into Matlab, excel, etc.)
- calculate the total aggregate backscattering cross-section captured (possible at any time, before or after corrections)

9.2.1. Capture window

On selection of the function *Zoom/Capture*, the shape of the cursor changes into a cross. You can use the mouse to select the area to be viewed by clicking on its top left-hand corner and dragging down to the bottom right.

The capture window then opens and usually represents the exact image of the area selected unless this area is smaller than the minimum size of the window.

When you close the capture window a phantom remains in echogram to show you the last region zoomed.

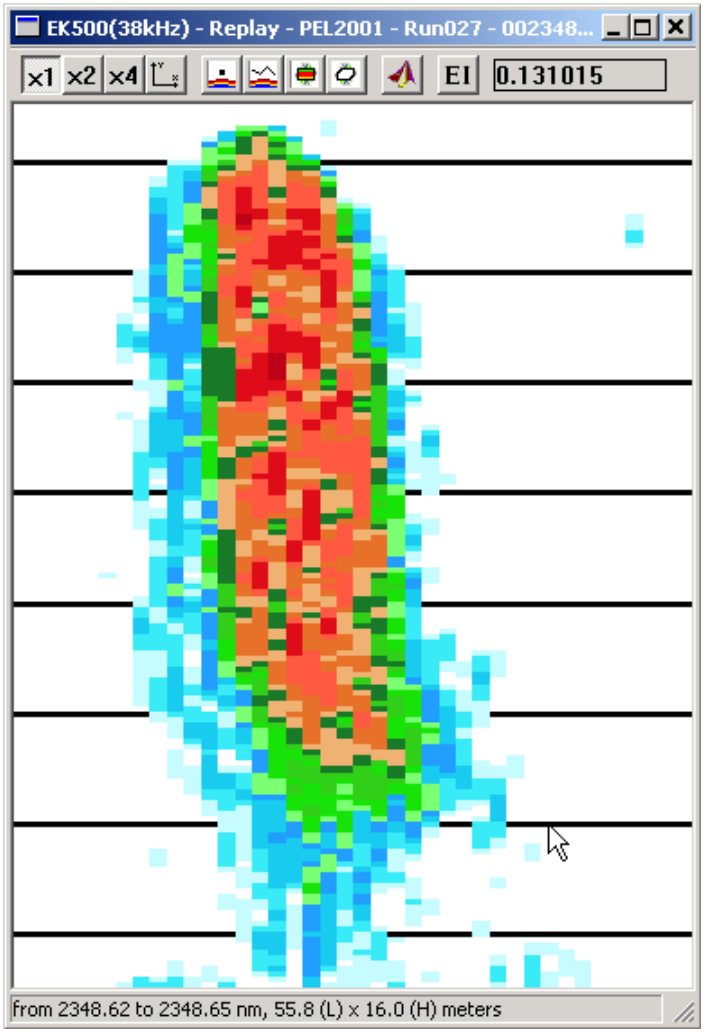


Figure 21: capture window after enlargement by four

The length and height in metres of the area captured is given in the left low corner.

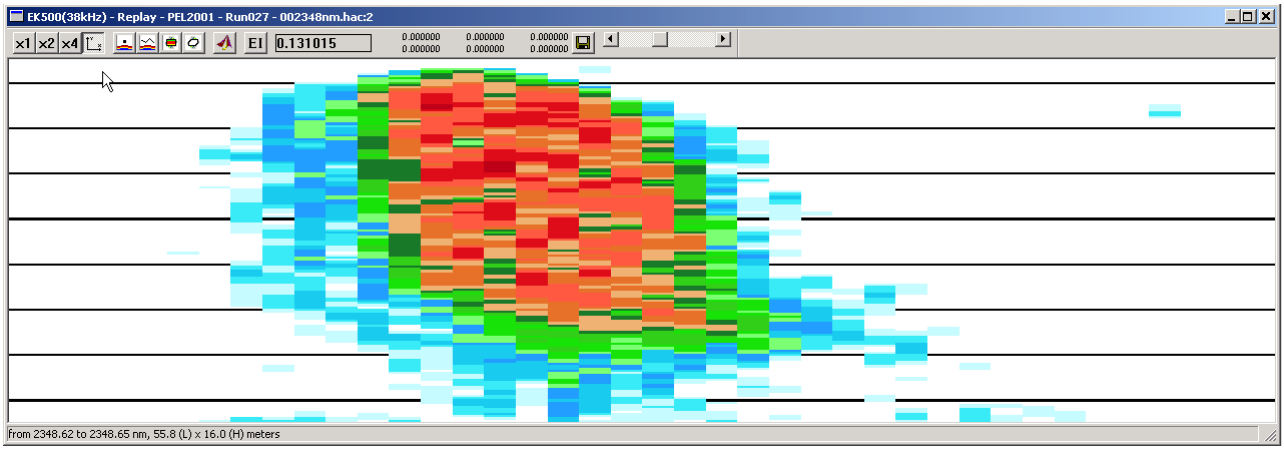


Figure 22: Capture window after adjusting to the real scale of a shoal

9.2.2. The capture tool bar

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

1. the capture window is on the same scale as the area selected, unless that area is smaller than the minimum window,
2. double the scale of the capture window,
3. enlarge fourfold,
4. adjust the window to actual proportions,
5. correct the seabed echo using a point tool
6. correct the sea bed using a line tool,
7. correct the echoes (average of a rectangle borders)
8. polygon tool used to delete echoes or compute a polygon total aggregate backscattering cross-section,
9. save the contents of the window as a .MatH file,
10. calculate (or recalculate after corrections) the total aggregate backscattering cross-section of the area captured,
11. display this window total aggregate backscattering cross-section in square metres,
12. display the aggregate backscattering cross-section for the D1 and D4 classes,
13. display the aggregate backscattering cross-section for the D2 and D5 classes,
14. display the aggregate backscattering cross-section for the D3 and D6 classes,
15. save the D1, ... , D6 classes in a text file,
16. scrollbar to change visualisation minimum threshold.

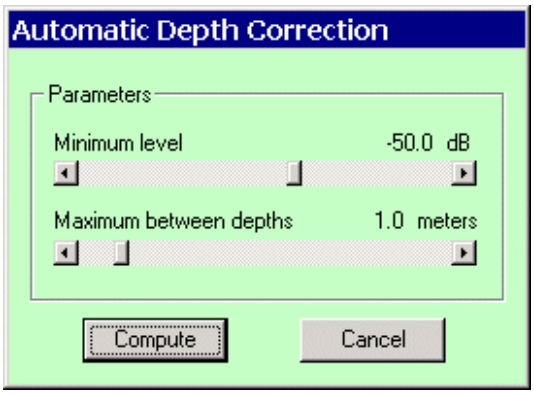
9.2.2.1. Seabed correction

To correct the seabed, you can use alternatively the point tool ,the line tool or the Automatic depth correction algorithm.

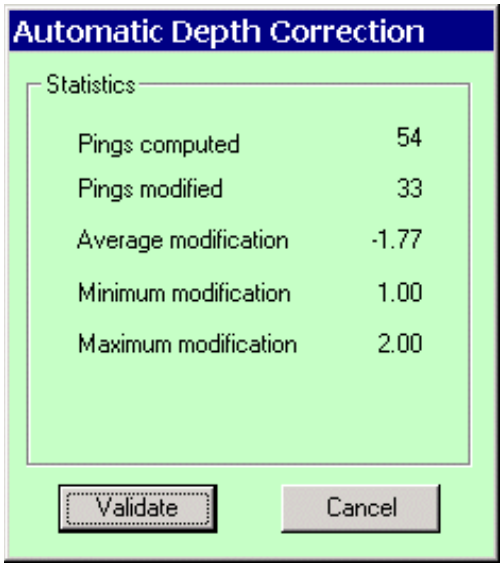
Point tool : select ping by ping the new location of the bottom,

Line tool : select the first point with the mouse left button then add each vertex. To end the line press the right button and select the “validate bottom correction” menu item. The line can be canceled with the “Cancel” menu item.

Automatic depth correction : To compute this algorithm, select the polygon tool. Draw a polygon around the seabed you want to correct. Press the mouse left button and click on the Automatic depth correction menu. Firstable you have to choice the algorithm’s parameters in the parameters window:



To process the algorithm, click on the “Compute” button. A statistic window appears to help you in your choice.



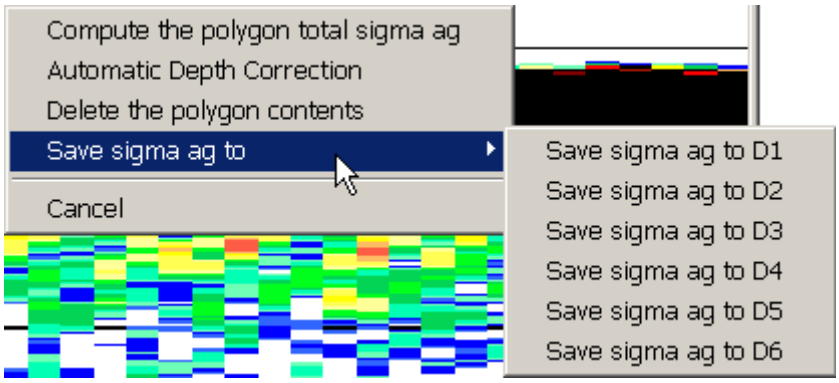
The new bottom appears in purple color. I f you want to validate the new seabed click on the “validate” button.

9.2.2.2. Echoes correction and measurement

To average echoes use the rectangle tool : draw a rectangle surrounding the echoes to be modified and they will be replaced by the average of the echoes surrounding them.

Warning : if the averaged echoes are lower than the display threshold, they will be displayed in white but the values archived are not null (-120 dB)

The polygon tool can also be used : draw the polygon vertex with the mouse left button and press the right button : a popup menu appears.


Compute the polygon total sigma ag
Automatic Depth Correction
Delete the polygon contents
Save sigma ag to
Cancel
Save sigma ag to D1
Save sigma ag to D2
Save sigma ag to D3
Save sigma ag to D4
Save sigma ag to D5
Save sigma ag to D6

Compute the polygon total sigma ag : displays the result in the window toolbar, the aggregate backscattering cross-section below the seabed is not taken into account.

Automatic depth Correction: Compute the algorithm of automatic depth correction

Delete the polygon contents : erases all echoes values inside the polygon. Null values (-120 dB) are assigned to these echoes.

Save sigma ag to : save the aggregate backscattering cross-section of the echoes inside the polygon in one of the six classes and display it in the window toolbar, the aggregate backscattering cross-section below the seabed is not taken into account.

Cancel : cancels the operation and remove the polygon.

9.2.2.3. Manual classification

The capture window enables you to make manual classification of aggregate backscattering cross-section and then for each ESU to save them in a text file.

To do classification you can either use the *Save sigma ag to* command of the polygon tool or save the content of a shoal when doing echo-integration by shoal.

When doing echo-integration by shoal the command to save sigma ag into one class is available with the right button of the mouse when no tool is selected in the capture window.

This classification has to be done ESU by ESU, after having classified one ESU, use the save button of the toolbar to save in a text file the properties of the ESU (the one corresponding to the first polygon or shoal saved) and the aggregate backscattering cross-section of each class.

9.2.2.4. Saving the corrections

When closing the window, you will be invited to confirm your corrections.

Corrections are automatically stored into a temporary file called *modified.hac* .

The *modified.hac* file must be stored in the directory of the survey concerned by these modifications. Please, check the current survey with the *File / Survey Path* menu before making corrections in order to verify that the current survey is the concerned survey.

After confirmation of your corrections, they will be integrated in a safe way to the *.hac* files. The file *modified.hac* will be automatically deleted.

For security reason, before first correction validation, the original file is copied into a *.bak* file and a new file receive corrections.

9.2.2.5. Matrix of amplitude export

You can use this tool to export a matrix of amplitudes corresponding to the zoom.

The file exported is a text file, which contains for each ping:

- ping number given by Movies+ during acquisition this number is unique for one channel and increments for each ping received.
- ground speed in knots
- surface speed in knots
- ping interval in second
- distance from the beginning of the zoom in nautical miles
- and then for each depth, its amplitude expressed in milliVolts

This file can be imported in Matlab or Excel.

test.MatH - Bloc-notes

Fichier Edition Format ?

	N° Ping	2956858	2956863	2956868	2956873	2956878	2956883	2956888	2956893	2956898	2956903
	Ground	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Surface	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	Int.	0.660	0.660	0.660	0.680	0.650	0.670	0.660	0.650	0.660	0.660
	Dist.	1.087	2.173	3.260	4.379	5.449	6.552	7.638	8.709	9.795	10.882
N° Echo	Depth										
314	60.76	0.10	0.00	0.21	0.00	0.12	0.00	0.00	0.11	0.00	0.12
315	60.95	0.00	0.11	0.00	0.00	0.00	0.13	0.00	0.18	0.48	0.28
316	61.15	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.16	0.60	0.18
317	61.34	0.12	0.00	0.00	0.00	0.00	0.00	0.13	0.14	0.82	0.41
318	61.53	0.11	0.00	0.16	0.00	0.00	0.00	0.15	0.10	1.37	1.53
319	61.73	0.00	0.00	0.00	0.00	0.11	0.15	0.11	0.17	1.19	1.71
320	61.92	0.00	0.00	0.12	0.00	0.00	0.14	0.28	0.22	1.62	2.00
321	62.11	0.00	0.00	0.00	0.00	0.00	0.14	0.32	0.41	2.24	2.34
322	62.31	0.00	0.13	0.00	0.00	0.11	0.00	0.30	0.29	3.69	1.69
323	62.50	0.11	0.14	0.00	0.00	0.10	0.23	0.32	1.23	2.04	5.75
324	62.69	0.19	0.13	0.00	0.00	0.00	0.25	0.89	1.64	2.43	5.16
325	62.89	0.10	0.00	0.00	0.12	0.18	0.25	0.83	1.57	1.04	3.75
326	63.08	0.00	0.00	0.00	0.14	0.14	0.21	0.68	2.03	0.57	3.95
327	63.27	0.00	0.00	0.00	0.00	0.00	0.00	0.39	1.43	1.50	3.69
328	63.47	0.20	0.00	0.00	0.00	0.00	0.14	0.37	0.83	2.14	3.36
329	63.66	0.17	0.00	0.13	0.00	0.00	0.12	0.42	0.91	1.97	2.12
330	63.85	0.00	0.17	0.00	0.00	0.00	0.18	0.19	0.71	1.75	1.23
331	64.05	0.16	0.19	0.00	0.00	0.12	0.51	0.50	0.17	1.57	4.33
332	64.24	0.00	0.12	0.00	0.00	0.16	0.55	0.98	0.92	2.14	2.69
333	64.44	0.00	0.00	0.00	0.13	0.14	0.34	0.95	1.21	3.11	0.42
334	64.63	0.00	0.00	0.00	0.20	0.16	0.00	0.82	1.28	3.14	0.39
335	64.82	0.10	0.12	0.11	0.12	0.12	0.15	0.26	0.73	1.38	0.92
336	65.02	0.14	0.11	0.14	0.00	0.22	0.00	0.39	0.35	0.21	0.76
337	65.21	0.17	0.15	0.15	0.17	0.23	0.17	0.36	0.44	1.16	2.40
338	65.40	0.25	0.30	0.00	0.23	0.20	0.26	0.37	0.57	0.86	1.98
339	65.60	0.28	0.35	0.12	0.13	0.20	0.13	0.21	0.44	0.46	1.40
340	65.79	0.12	0.18	0.19	0.00	0.17	0.14	0.13	0.00	0.85	1.15
341	65.98	0.19	0.00	0.24	0.00	0.11	0.17	0.18	0.24	0.57	1.09
342	66.18	0.00	0.10	0.17	0.00	0.00	0.19	0.00	0.31	0.19	0.38
343	66.37	0.00	0.00	0.00	0.20	0.11	0.16	0.14	0.83	0.74	0.55
344	66.56	0.00	0.14	0.14	0.35	0.10	0.22	0.20	0.58	0.77	0.28
345	66.76	0.27	0.18	0.00	0.26	0.00	0.28	0.29	0.65	0.87	0.00
346	66.95	0.31	0.24	0.19	0.20	0.00	0.18	0.19	0.63	0.90	0.54
347	67.14	0.15	0.00	0.28	0.20	0.10	0.00	0.15	0.00	0.00	0.31
348	67.34	0.00	0.00	0.27	0.31	0.17	0.24	0.28	0.29	0.22	0.13
349	67.53	0.10	0.15	0.17	0.17	0.12	0.19	0.22	0.51	0.25	0.35
350	67.72	0.00	0.15	0.00	0.00	0.18	0.11	0.17	0.58	0.22	0.63
351	67.92	0.00	0.14	0.00	0.20	0.21	0.17	0.26	0.47	0.33	0.24
352	68.11	0.14	0.00	0.00	0.16	0.00	0.18	0.33	0.25	0.18	0.11
353	68.31	0.11	0.00	0.00	0.13	0.00	0.00	0.15	0.11	0.20	0.20
354	68.50	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.13	0.00	0.00

Figure 23: example of a matrix of amplitude exported in a text file

9.3. Tomography

A tomographic image of the echoes can be obtained using the *Tools / Tomography* menu. This function is available at any time, in replay or during acquisition.

When you select the Tomography function, the shape of the cursor changes to a cross. Using the mouse, select the area to be viewed by selecting the top left-hand corner and bottom right-hand corner. The Tomography window will then open to the standard size of a Windows window.

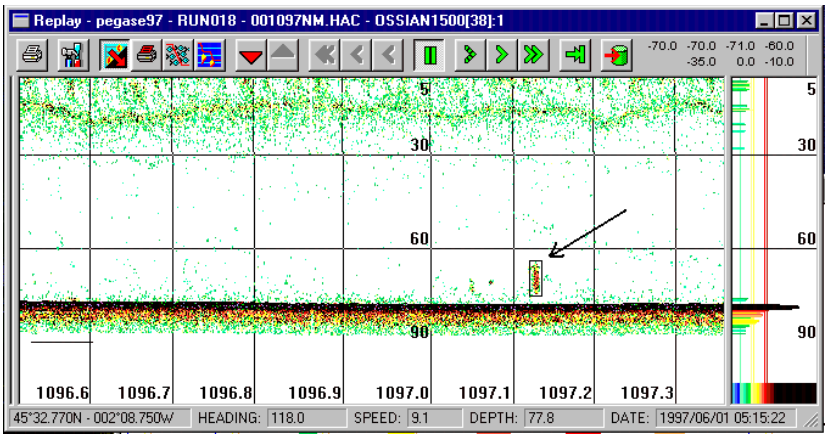


Figure 24: selecting an area for tomography

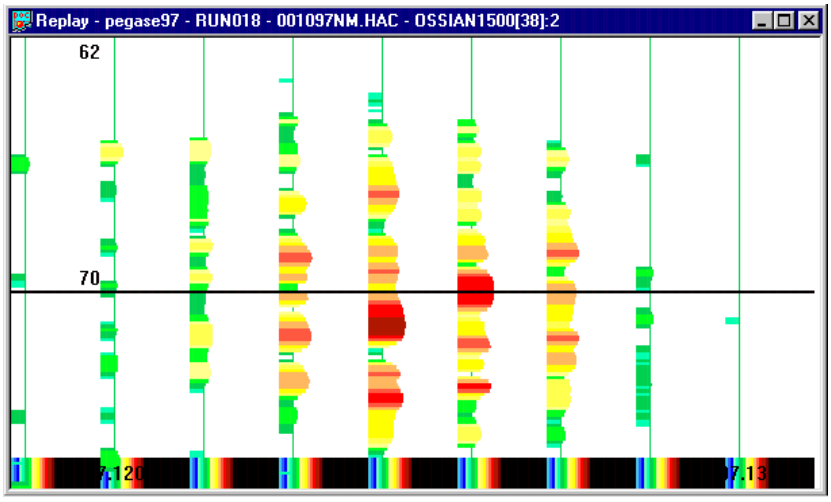


Figure 25: tomography window

10. The log

The log gives you the option of recording significant events during acquisition. The events recorded allow you to annotate the display of the pings by using markers in the display. This log is accessible at any time.

10.1. Creating an event

You insert a new event with the command *Log / New Event* or with the icon in the tool bar. A dialogue box is then opened, enabling you to fill in the appropriate fields.

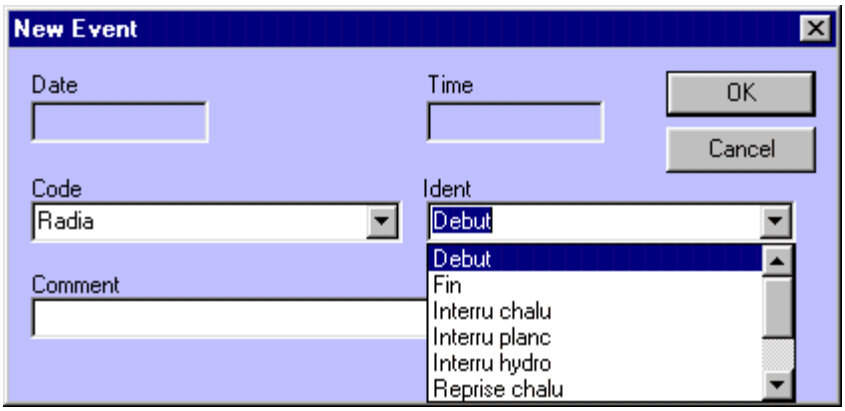


Figure 26 : the log event dialog

The codes and identifiers proposed in the two scroll-down lists are those recorded in the file *evt_fr.ini*.

You are therefore perfectly free to adapt the contents of this file as required.

10.2. Consulting the log

The log is opened by the command *Log / View* or by the icon . A window then appears presenting the list of events in the log.

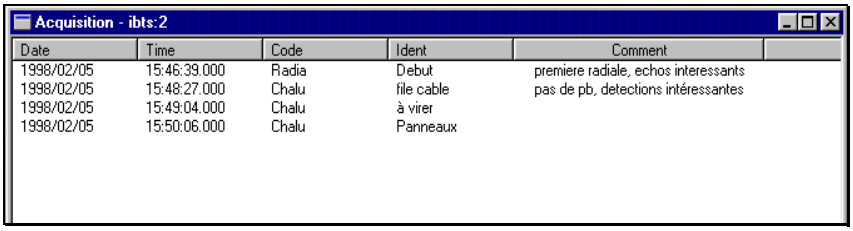


Figure 27: the log dialog

10.3. Annotating the display of pings, using events

Every time an event is created, a discreet marker in the shape of a star is inserted in the display of pings, at the top of the window.

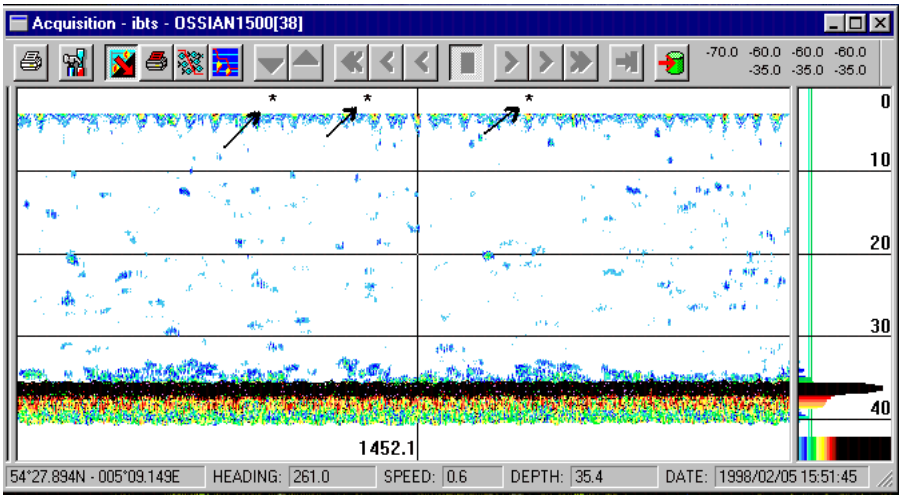
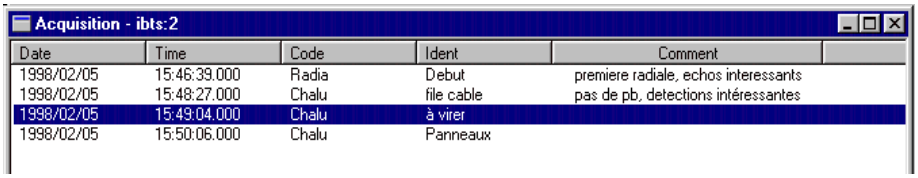


Figure 28: events markers in the acquisition window

A double-click on one of the markers will open the log window if it is not already open, and will take you directly to the event concerned, in this window.

The event selected will then appear in the window, highlighted.


Acquisition - ibts:2
Date Time Code Ident Comment
1998/02/05 15:46:39.000 Radia Debut premiere radiale, echos interessants
1998/02/05 15:48:27.000 Chalu file cable pas de pb, detections intéressantes
1998/02/05 15:49:04.000 Chalu à virer
1998/02/05 15:50:06.000 Chalu Panneaux

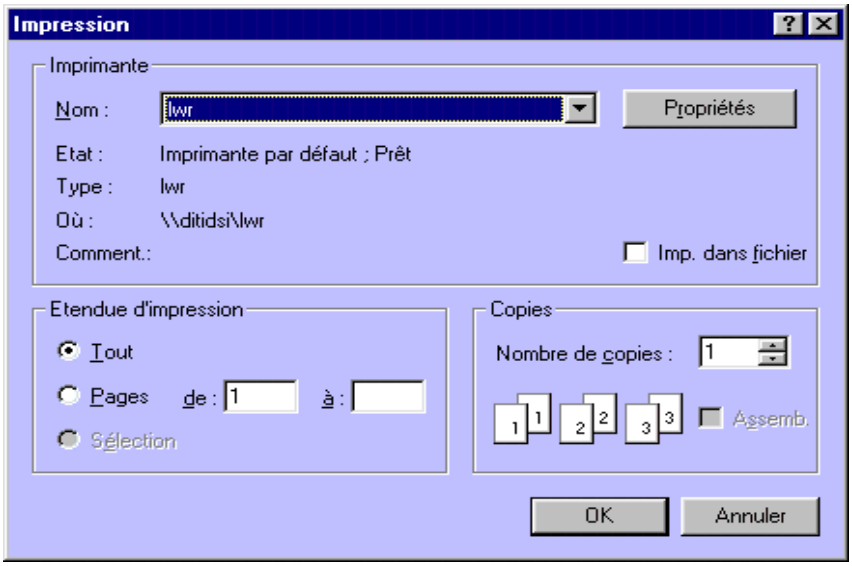
...

11. Printing

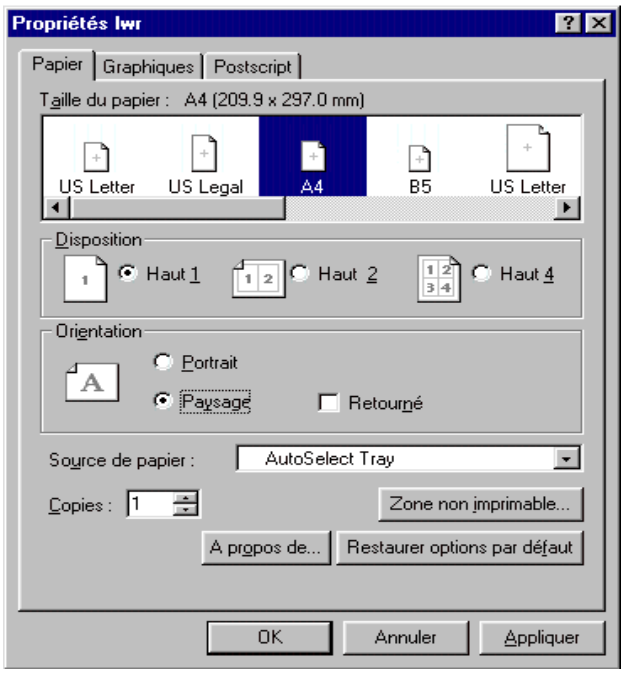
11.1. Continuous printing

The icon gives access to the continuous print function.

The usual dialog box appears:



You may well need to alter the page orientation (portrait or landscape)



If printing is laborious, interferes with acquisition and slows down the operation of the machine, it is generally possible to speed it up, though with some loss of quality. You can select the quality level via the dialogue box *Properties*.

This box is accessible when you run the print option. it can also be opened via the command *File / Print SetUp ...*

Pages are numbered.

Each printed page contains the information necessary to identify the pings:

- date and time of the start and end of page,
- position at the start and end of page,
- palette and display thresholds used,
- value of the standard deviation

If you want to use continuous paper, please select the mode *manual banner*.

Printing is limited to the n samples below bottom depth if defined for the survey (see paragraph *Setting up the survey* – page 31)

Reminder

The number of pings printed per page is adjustable. See the paragraph *Setting display parameters.*

11.2. Printing the contents of a window

The icon is used to print the current contents of an acquisition or replay window.

It is run in the same way as the real-time printing.

11.3. Printing a captured screen

The contents of a capture window can be printed. This window needs to be the active window of Movies+ (i.e. the top margin is dark blue). To make it active, click on it.

The command *File / Print* then runs the printing.

12. Advanced users tools

12.1. Acquisition software – the example of OSSIAN

Real time acquisition of sounder frames is handled by a separate program which detects frames, turn them into HAC tuples and transfers tuples to the movies.exe program for display and archiving.

Since each sounder delivers specific frames formats, specific acquisition programs must be developed. Today only SIMRAD and OSSIAN sounders are supported but acquiring new sounders is easy.

All acquisition programs use the same architecture and the practical differences between them are minimal. Acquisition using Ossian sounders is presented here as an example.

Remember that there is no need to be familiar with the functions offered by the acquisition software in order to be able to use Movies+ easily. The functions offered are at the disposal of those responsible for the installation to be able to check that the software is properly installed.

You can however benefit from the simulation options to familiarise yourself while ashore, with how the software will behave at sea.

Acquisition is run from Movies+ via the command *Sounder / Start*.

The client-server architecture
The acquisition program is known as the "**client**" of the program Movies+ and Movies+ is said to be the "**server**" of the acquisition programs, because Movies+ provides the acquisition programs, on request, with the services for displaying, archiving and echo-integrating the acquired data.

12.1.1. The main menu of the acquisition client

12.1.1.1. Acquisition

Acquisition gives access to the acquisition command functions:

- *Quit* stops the program (independently of the Movies+ server)
  reminder:
  normally, acquisition is stopped by means of the command *Sounder / Stop* in Movies+,
- *ReStart* restarts acquisition after a stop,
- *Stop* suspends acquisition on the system. Acquisition can then be simulated from a frame file, and subsequently restarted.

12.1.1.2. Tools

Tools is used to control the main functions of the software: simulation, archiving, etc.

- *Configuration* consult the acquisition configuration (this information is not modifiable; it is read-only),
- *Archive telegrams* files the telegrams acquired on the system.
- *Check* checks the telegrams by displaying them in the acquisition software window. The window must first be enlarged,
- *Simulate* simulates acquisition by reading telegrams from a file,
- *Stop Archiving* stops archiving,
- *Stop Checking* stops checking,
- *Stop Simulating* stops simulating

12.1.1.3. Tuning

Tuning is used to adjust the operation of the software.

- *Tempo50ms* sets the time-delay between two reads on the system or from a telegram file at 50 ms, the time-delay of 50ms is the normal time-delay for acquisition from the system
- *Tempo100ms* sets the time-delay between two reads on the system or from a telegram file at 100 ms,
- *Tempo150ms* sets the time-delay between two reads on the system or from a telegram file at 150 ms,
- *Tempo250ms* sets the time-delay between two reads on the system or from a telegram file at 250 ms,
-

12.1.1.4. View

- *Toolbar* turns the tool bar display on or off,
- *Status* turns the software status bar display on or off.

12.1.2. The acquisition client tool bar

This tool bar gives direct access to the main software functions.

1 2 3 4 5 6 7 8

1. restarts acquisition, after suspension,
2. simulates acquisition by reading telegrams from a file,
3. checks telegrams by displaying them in the software acquisition window. This window has to be enlarged first,
4. files telegrams acquired from the system,
5. alters the time-delay between two reads,
6. reads a ping from a telegram file,
7. stops the software,
8. help.

13. Frequently asked questions

13.1. Acquisition – Error creating socket

When you start an acquisition, if a message *"Error with creation socket* " is displayed, please verify you have not already started a still active acquisition with this sounder. (Reminder : The task bar shows all the active tasks)

If it is the case, it is not useful to start again a second acquisition.

If this active acquisition is not connected to the server, use the *Acquisition /Quit* menu to stop this task.

13.2. Archiving: a *000000nm.hac* file is created

It occurs if data are divided by distance and if the first distance is not initialized by Movies+.

In this case, if the archiving is « On » before the sounder delivers a distance value on the network, the data acquired will be archived in a *000000nm.hac* file until a distance value is available.

And all will be correct as soon as this first distance will be received.

13.3. Archiving : a *Run900* directory is created

With the *automatic session* option, a *Run900* directory is created and it is not the 900th day of the survey.

This number 900 is used when a problem occurs with the date.

The problem generally comes from the software which was unable to calculate a right day number. The day number is calculated from the difference between the date in the data and the date at the begin of the survey. You must check this date using the *File / Survey Path menu.*

13.4. Display: Undisplayed information

Movies+ display uses a bitmap, which is the only technology capable of combining speed with immediate display resizing.

When you reduce the size of the window, the data to be displayed must also be reduced to remain within the window. During this operation such information as distance scales or echo-integration limits may be lost.

One way of avoiding this is to increase the window size, if possible.

Another way is to increase the X Scale factor (available in Configuration Display). This factor serves to repeat the display of each ping and distance scales x number of times.

13.5. Installation : .dll files are missing

These files are Windows95 software components that are required by the Movies object program and requested during start-up. They include the following, for example:

- olepro32.dll,
- msvcrt.dll

If these files are lacking installation was incorrect. These files must be installed in the *C:\Windows\System* directory.

13.6. Palette: Gray color bars are inaccessible:

Check that your computer is set up for 16-bit (and not 8-bit) color. Control Panel - Display properties - Configuration.

13.7. Printing : reduces speed of the processing

To avoid it, you can try another printing quality.

13.8. Time: Time is not right

Movies+ uses GMT time.

For a right use, :

- Computer time must be GMT time,
- Time zone must be adjusted according to this time.

You can use the configuration panel of Windows to adjust the date/hour and the time zone.

13.9. Zoom / capture : it doesnt work

The zoom / capture window has a minimal size. So, if the selected area is smaller than this minimal size, you will have the feeling that the enlargement doesn’t work.

14. Limits and Restrictions

14.1. limits of software

Maximum number of scrolled pings displayed and RAM capacity of your computer.	=	according to number of samples
Maximum number of depth layers	=	40
Maximum width of a echo-integrated layer (Standard mode)	=	800 m
Maximum width of a echo-integrated layer (Advanced mode)	=	6000 m

14.2. Archiving : changing parameters

Archiving parameters used at a precise instant are shared by all the current acquisitions.

So you are not able to use specific thresholds for each sounder, or to use a specific strategy for a sounder in case of lost of seabed.

14.3. Display of depth layers

When the limit of depth layers are changed, the display is modified from its beginning and not from the time you changed these limits.